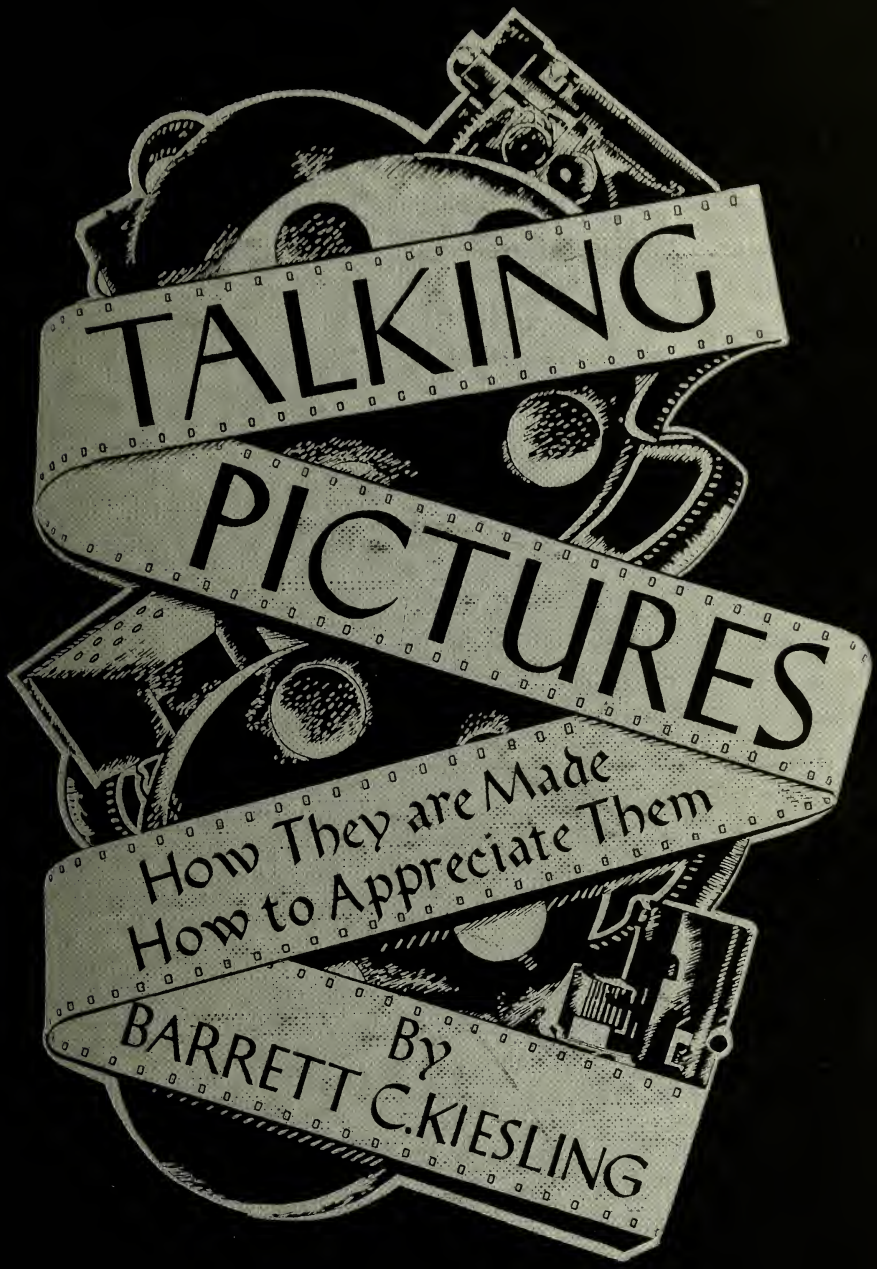
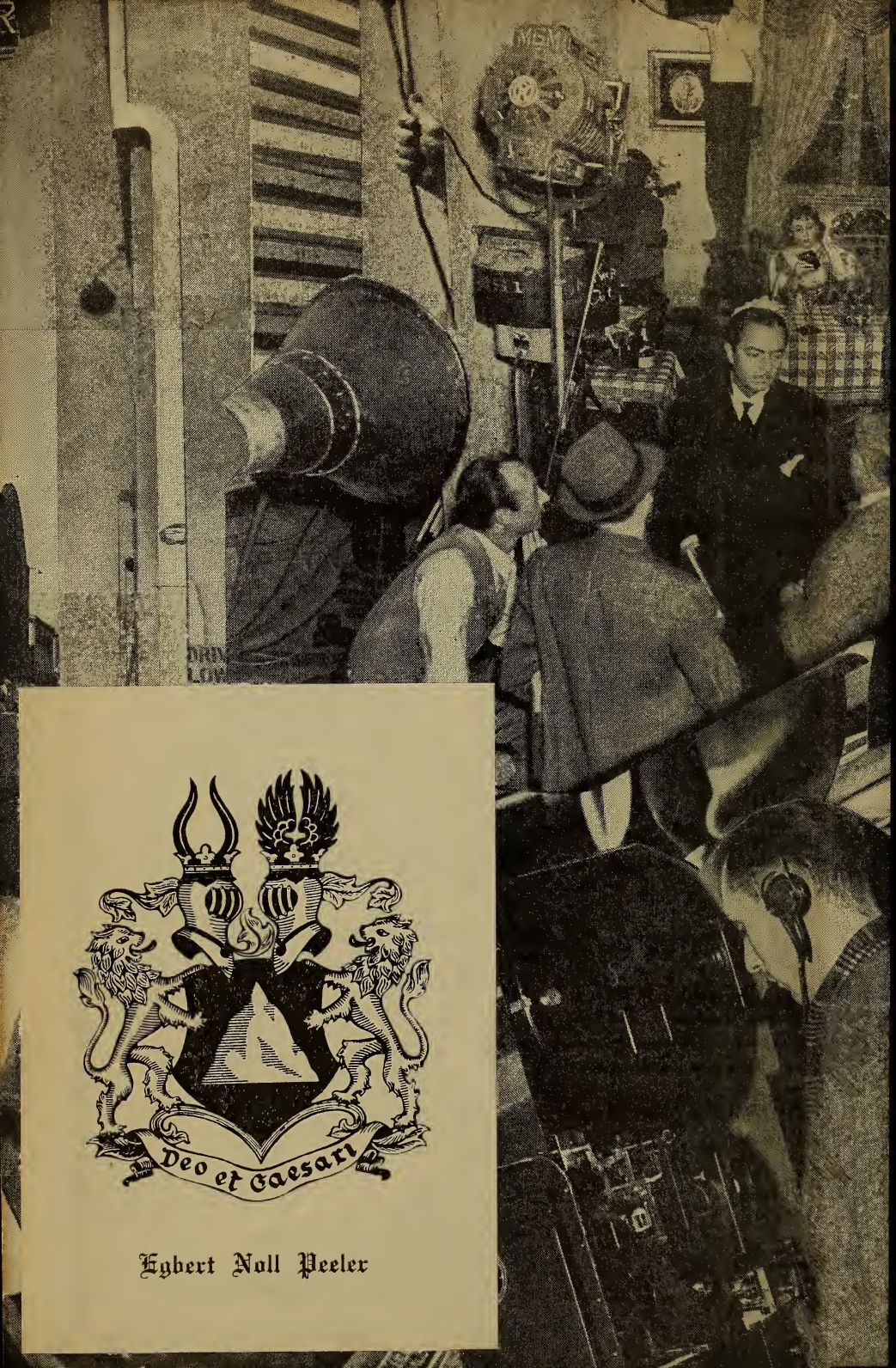

TALKING
PICTURES
How They are Made
How to Appreciate Them
By
BARRETT C. KIESLING



Egbert Noll Peeler

TALKING PICTURES

Air view of a famous studio

TALKING PICTURES

HOW THEY ARE MADE HOW TO APPRECIATE THEM

BY

BARRETT C. KIESLING

JOHNSON PUBLISHING COMPANY
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TO L. W. K.

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FOREWORD

So complex is a production for the screen, so many and varied are the elements involved, so great is the experience, the judgment, the skill required, that no adequately critical appreciation of a motion picture is possible unless there is knowledge and comprehension of the problems involved.

This book should lead those who read it to a truer and more thoughtful consideration of the cinema. It should give them a better understanding of what it means to catch and hold on a strip of film the best in art, the best in music, the best in acting, the best in drama, and the best in literature. It should teach them something of what is required to provide amusement for the village and the city, the nation and the world. It should show them new values, sharpen their discrimination, and stimulate their imagination.

In giving the public facts upon which to base a fuller, sounder estimate of a universal amusement art, it seems to me that Mr. Kiesling has done a fine and useful piece of work.

WILL H. HAYS

1

MOTION PICTURE APPRECIATION

"Say, I could make a better picture than that!"

"Why, it isn't like the book at all!"

Was it not only last night that someone made these two remarks in the lobby of your favorite theatre?

They are familiar to the attendants of the 52,175 commercial talking picture theatres of the world. And they are heard, likewise, in the thousands of colleges, churches, and clubs which are equipped to show silent or talking films.

The ever increasing millions of film fans may differ from one another radically concerning preference for Greta Garbo or Katharine Hepburn; Fredric March or Clark Gable; Norma Shearer or Claudette Colbert. They may prefer slapstick comedy to romance but they all seem to agree on two things: first, that pictures are absurdly easy to make and require no special training or aptitude; second, that motion picture producers in their treatment of books and stage plays bought for film productions are like little boys taking clocks apart and putting them together again. They apparently make changes without good reason.

In the two quoted remarks above, one feels the need for a new and different approach to the subject of how to appreciate a modern talking picture.

The belief that talkies are absurdly easy to make

("Say, I could make a better picture than that!") arises from a very natural source. Motion pictures sprang from nowhere, like a mushroom growing overnight to the height of the Empire State Building, to fill a need for mass relaxation in a highly keyed world.

Today the resources of immense studios employing thousands of workers are tapped to produce photoplays which flash across the screen in a little more than an hour, smoothly, easily, with no jars, no waits, no delays. This smooth progression is necessary in a motion picture. The public, seeking to be amused, want this operation completed, for them, in as easy a manner as possible.

And it is proper that they should wish this, for they usually come to the theatre to relax after a day of hard work. They are resentful if a clumsily handled story breaks the even flow of their enjoyment, or makes them uncertain of the exact relation between various elements of the plot. They demand a clear, concise presentation.

Very early the public learned that the interruptions of the stage (scenery changes) and of the novel (turning pages) are not needed to tell a motion picture story. More and more, as the public have become expertly critical of screen entertainment, they have demanded of film producers a technique that grows seemingly more effortless each year.

This easy forward development of the best motion picture stories has created a superficial public impression that the actual making of a twentieth-century photoplay is quite as easy as its familiar steady movement. The average "movie fan" is amazed when he is told that making a talking picture is by all odds one of the most

complicated jobs in the world and that 276 different professions, arts, industries, vocations, and avocations are involved.

Observing from the purely physical side, one may see that no other world activity draws as heavily from so many different countries. Close your eyes. Walk to the map on your wall. Blindly extend the index finger of your right hand and touch that map. It matters not on what body of land your finger may fall, or how remote the immediate point may be from so-called civilization: a trained motion picture technician can tell you of something specific obtained from that locality to make a certain motion picture. This is one reason why it is suggested that the ordinary approaches to photoplay appreciation have been inadequate.

Most of these studies have been splendid in their analytical discussion of the story concerned. They have been correct, often inspiring, in their discussions of the motives behind the author's handling of his plot and of his characters. But, somewhere along the line, they lose force and authenticity.

Perhaps this is caused by many writers overlooking the fact that, unlike the other arts, a successful motion picture story cannot successfully be studied apart from its construction, its method of presentation. The two things are inseparable. No one can possibly judge the various values of a completed motion picture unless, first, he knows thoroughly each one of the different creative arts which goes into the film of the present day; and second, he understands the differences between the stage play, the novel, and the photoplay.

The first point concerns the sentence with which this chapter and this book started: "Say, I could make a better picture than that!" The second is tied with the second sentence: "Why, it isn't like the book at all!"

For these reasons it seems essential to interrupt the easy flow of that scene you have just witnessed, to break it into its component parts. Only in this manner can a motion picture ever be evaluated accurately.

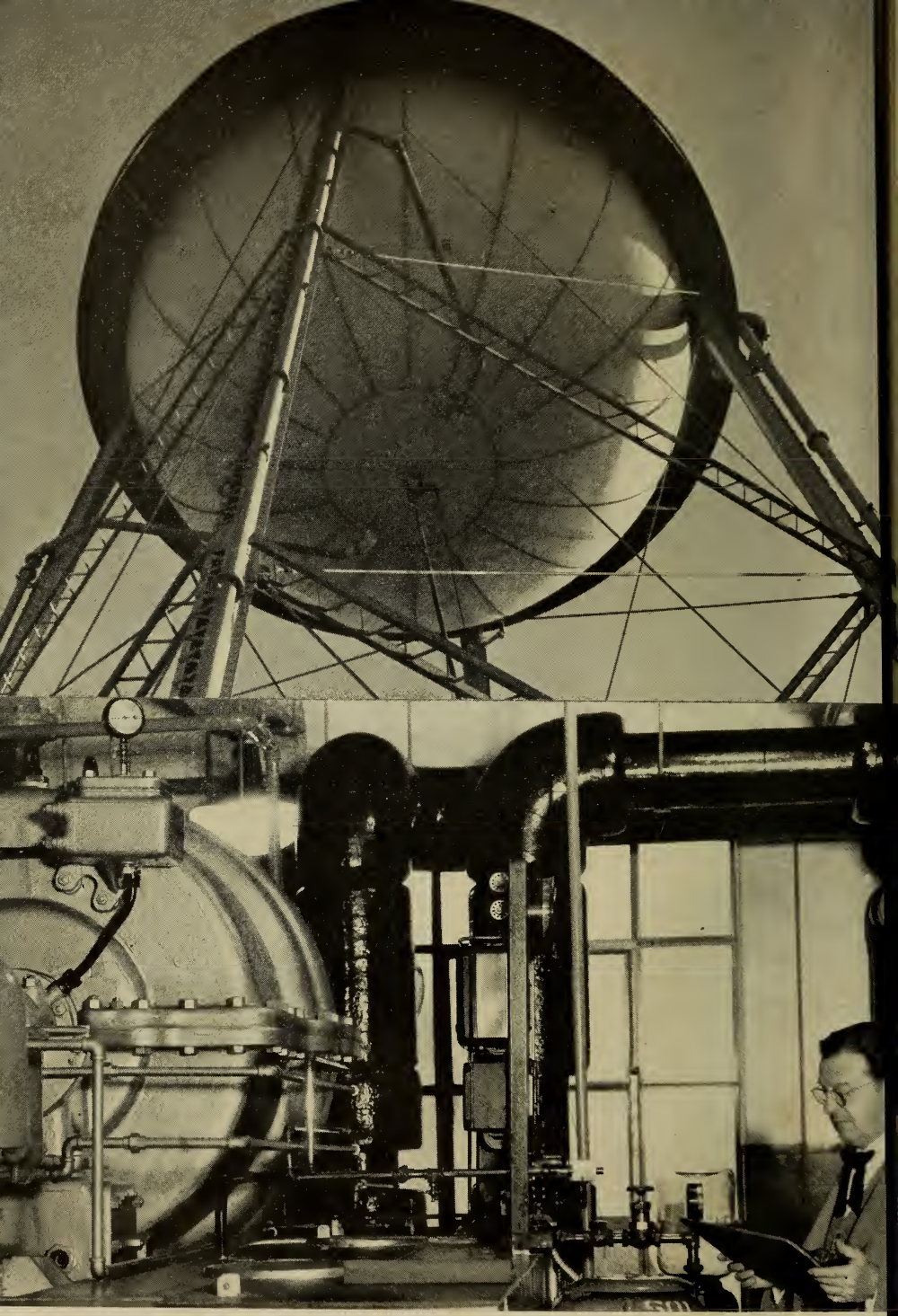
During the latter part of the seventeenth century, Antonio Stradavari, an Italian violinist working in Cremona, designed over a score of violins which represent the work of a genius. Some of these rare treasures are in existence today.

When a great violinist like Heifetz runs his bow across the strings of a Stradivarius, two major elements are involved. There is first the magical power of a long dead Italian violin maker to breathe extraordinary sound reproducing quality into a few pieces of wood and a few catgut strings. And second, there is the God-given, instantaneous reactions within the muscles and subconscious mind of the artist himself.

In this case, and in that of a painting by Rembrandt, allotment of praise is relatively simple. But in a motion picture the problem is more diffuse. A photoplay is a mosaic of many different arts and vocations, to be exact, 276. Take but one tile from this mosaic, the perfected work of a single artisan, and we detract from the charm of the whole.

In the basement of one immense laboratory in which one hundred fifty million feet of film are processed

An avenue of talking picture stages
Entrance to a film studio



A studio tank stores water for film development

Air conditioning plant for a laboratory processing 600,000 feet of film daily

annually, there are huge tanks of developing fluid. In each of these tanks one finds a complicated mechanism of wires and chemicals. The purpose of this device is to keep that developing fluid always within two tenths of the same degree of temperature. Were that device to fail by two tenths of a degree, a love scene on the screen would lose its brilliance; carefully calculated lighting effects would lose their appeal to the visual sense.

The reason for this is that the creation of the final pictorial image on the finished film is a chemical process. The film, as it enters the camera, is coated with chemicals called an emulsion. This emulsion is sensitive to light, or rather the light causes changes in the chemicals. These changes become permanent when the film is run through a bath of other chemicals called the "developer."

In Canada there is a keen critic who for forty happy years has reviewed stage plays, the opera, paintings, the novel, and motion pictures for an influential newspaper. I quote him because I consider his wise, considered statements applicable to this discussion.

"Mr. Kiesling," said Augustus Bridle of Toronto, "you will have noticed that for years I have not used, in any of my motion picture reviews, the expression, 'This is a bad motion picture.' Instead I prefer to say 'This is an imperfect motion picture.'

"Unlike a book, a painting, or a concert by a great musician, praise or blame cannot be clearly allocated in evaluating a film.

"I have seen many a motion picture in which I felt that the leading lady, for example, was miscast. But in

that same motion picture there would be a gem of a setting by Cameron Menzies or Cedric Gibbons. The lady in fault would also be carried to new heights of physical beauty by the gown creations of an Adrian or an Orry-Kelly. The lighting by some unknown electrician, the photography by a William Daniels, a Karl Freund, an Oliver Marsh would be exquisite.

"And in like manner we have all seen the perfect acting of a perfectly chosen cast in a deft, well-directed story, robbed of its full values by unattractive sets, incompetent research, faulty sound recording—dozens of different but equally important elements.

"It is absurd to use the unqualified adjective 'bad' in connection with an art that will always be mosaic in its character.

"It is absurd, further, for anyone to try to criticize a motion picture with no more knowledge than he needs for the criticism of a book or play.

"In other words, you can't really evaluate a motion picture unless you are able to take the whole thing apart, and then reassemble it, accurately, correctly."

This is not only true of motion pictures. One cannot understand a poem unless he knows the background of the poem and something of the author's life. Nor can one find the inner meaning of a picture by Leonardo da Vinci or of a great cathedral unless he knows what actual vision, insight, and power went from the artist or the architect into his work.

To accept a thing blindly indicates a narrow mind, a limited outlook. If we are to understand anything and to form a sound opinion of it, we must analyze it,

weigh its various parts, and see their relation clearly. In a process as complicated as making motion pictures, in which hundreds of people and many arts and crafts contribute to the whole, it is necessary that we should know the part played by every man, the contribution given by each craft.

In approaching the subject of motion pictures, one naturally considers Hollywood. But we must not overlook the fact that movies are made, and successfully, in New York, London, Berlin, Paris, Bombay, Mexico City, China, Japan, and many other places. But in Hollywood about 70 per cent of all the world's successful commercial films are made. In this community we shall find the largest single assemblage of trained men and women, and adequate materials.

In Hollywood we shall see stories being chosen and written. We shall watch them as they pass through every process until the completed photodrama emerges from the laboratory in the shape of a narrow strip of celluloid ribbon, thirty-five millimetres wide and over a mile and a half in length.

We shall see scores of people doing different, fascinating things. We shall look into the future of the film industry and judge whether it is going up or down in the scale of importance during the next two or three decades. Beyond its place as an entertainment medium, we shall see what it offers to ambitious people with intelligence, courage, and imagination.

To some it will come as a surprise, and a challenge, to find themselves rubbing shoulders with so many different kinds of scientists and artists, working, experi-

menting, straining their nerves and their minds to carry forward still further this new art which has achieved so much in so short a time, which has before it still more alluring vistas.

The simplest way of impressing this fact would be for us to go physically to Hollywood, or any other picture making center, and actually visit a studio. But this is not practical. It will take only a few incidents to show why visitors are not welcome; why it is that the studios have uniformed officers to guard their gates.

The story is told of that day when Cecil B. DeMille, noted director, was filming *The Ten Commandments.* The scene was in the palace of the Pharaohs. Moses, played by the late Theodore Roberts, had come to plead for the release of the enslaved Israelites. Hundreds of men and women were in the setting. A score of cameras had been set to get every detail. An entire day had been spent in careful rehearsals and in placing hundreds of big lights. Finally, late in the evening, everything was ready for the first actual "shot." The director called "Camera," and the sensitized film began to pass behind the lenses of the cameras.

Suddenly a taxi driver, in full uniform, appeared standing in the scene, near a group of bearded Jews. Coming to pick up a customer, probably one of that very group, he had stopped to view the scene and, not being able to see well from behind the lights, he had stepped in front of them. DeMille roared with rage. So far as is known, the young man is still running!

And there was a young lady who did not see a cable lying at her feet while Norma Shearer and Clark Gable

were playing a love scene. She tripped over the long, writhing wire, and every light on the stage went out!

One day, on a Marx Brothers set, a vigilant assistant director noted a visitor, a prominent, dignified banker, obviously about to break into a loud guffaw while the cameras were turning, while the recording microphone was "alive." The assistant director quickly stuck his right hand into the man's mouth and wound the left arm tightly around his throat. When the scene was over, there was not a thing the banker could say in protest. The assistant director was completely within his rights.

Such incidents, threatening thousands of dollars of waste in lost time, have made it necessary for the film men to close their sets to all except those who have actual business there, those trained to strict production discipline.

In Hollywood we shall meet scores and scores of interesting studio folk of whose existence few have ever dreamed. We shall chat with girls who have nothing to do but see ten complete motion pictures each day! We shall be told of a man with rubber clothes who takes a huge fortune in silver every year from dirty developing fluid. We shall meet a man so deft with powder, with dynamite, that he can blow a wall from behind an actor on a set and not disturb the crease of his trousers or the flounces on an actress' dress. We shall find most interesting the job of a woman whose duty it is to tell to just one dozen men the three hundred stories written each year which she considers most adaptable to the motion picture form.

2

HISTORY OF MOTION PICTURES

Terry Ramsaye has named his excellent standard history of the motion picture *A Million and One Nights*. Ramsaye's reference is, of course, obvious. If we enjoy the anthology of the Arabians, *The Thousand and One Nights*, glamorous, romantic, exotic, filled with the uncertain and the unexpected, Ramsaye asks that we stop for a moment and consider the origin of the motion picture. It has a truly remarkable dramatic and scientific heritage.

Out of the past of the motion picture we may find some of the reasons for its present amazing vitality. American history would be meaningless without Washington, Lincoln, and Jackson. Similarly, no one can know the present stature of the photoplay or attempt a prophecy of its future without understanding its past and the parts played in it by pioneers like Muybridge, Armat, Lumière, Edison, Laemmle, Griffith, Zukor, Mayer, Thalberg, DeMille, Zanuck, and the Warners. But, long before these pioneers, there were men who had made inventions which played an important rôle in motion picture development.

In 1640 Athanasius Kircher, a Jesuit, showed his *Magia Catoptrica*, or magic lantern, before an audience of Roman nobles. His single shadows on the walls were

very much like those presented by the more modern magic lantern of today. But he also showed in his book *Ars Magna Lucis et Umbre* (The Great Art of Light and Shade) a method of changing from picture to picture by the use of a revolving drum. He approached closely an understanding of the optical illusion which is the foundation of the motion picture, but his goal was not quite achieved.

The inventions and discoveries available today were unknown to Kircher, but to him came one of those flashes of inventive prevision without which we would not have our remarkable, mechanical world of today. Kircher lit a small match which became the blazing conflagration which is the modern motion picture. What would the world have done without its Kircher; without its Watt, discovering the principle of the steam engine from the action of a tea kettle on a table in his English home; without Franklin, who with his kite and his metal key brought electricity from the lightning-streaked heavens?

Every industry of today has its imposing biography of genius. Ford, Chalmers, and Kettering are but a few names along the highroad which led to the 1937 automobile. Edison, Steinmetz, and Marconi we recognize as leaders in the field of electrical science.

In equal measure the motion picture has its parade of genius. After Kircher the next genius of great importance to emerge was Peter Mark Rôget, author of the widely used Rôget's *Thesaurus*. But Rôget was also a scientist and in 1824 he appeared before the Royal Society in London and read a paper entitled

"Persistence of Vision with Regard to Moving Objects."

Rôget had caught in his mind a concept of the next step beyond Kircher's *Magia Catoptrica.* He pointed a way whereby the single picture consecutively presented by Kircher, or anyone else, could be made to seem to move. His theory, and it is the scientific basis of the billion-dollar film industry of today, is that if pictures of persons or objects are passed before the eyes in separate consecutive stages of movement, the eye tends to remember the last picture as it passes on to the next. But Rôget merely expressed this theory in words.

It was Sir John Herschel who noted that when a shilling was spun on a table the face and the obverse were blended. Hearing of this incident, Dr. William Henry Fitton—a geologist, chemist, and physician—prepared a demonstrating device. It was a little disk of cardboard with strings attached to twirl it. On one side was a drawing of a bird, on the other a cage. Revolve the disk, and the bird appeared to be in the cage.

Dr. Joseph Antoine Ferdinand Plateau, of the University of Ghent, Belgium; Dr. Simon Ritter von Stampfer, Vienna; the great Michael Faraday; Lt. Baron Franz von Uchatius, Vienna; William George Horner, Bristol, England—these, and other scientists, developed still further the possibility of showing objects and persons in motion through the Law of the Persistence of Vision.

At the same time Louis Jacques Mandé Daguerre and Joseph Nicephore Niepce were carrying forward, separately, the invention of single picture photography.

December 14, 1829 saw the birth of a process to make light record its images through a lens on a treated metal plate.

February 5, 1861 marked the emergence of the term "cinema." Coleman Sellers, mechanical engineer of Philadelphia, Pennsylvania, patented his Kinematoscope and gave to a great modern industry its basic name. The Kinematoscope did not present photographed motion, for the plate of the day was chemically too slow for consecutive photographs. But Mr. Sellers took separate poses of his young sons in consecutive steps of action. These pictures were mounted on a device similar to a paddle wheel. Observed when revolved at a proper rate of speed, an impression of motion resulted.

In 1863 the Phasmatrope of Henry Heyl, of Columbus, Ohio, and of Philadelphia, presented such an effect by means of a magic lantern. Thin glass positive pictures of Heyl's waltzing with a partner were mounted radially on a wheel. They were exposed intermittently to the light ray of the lantern. Of these Ramsaye writes: "This machine had a shutter and a ratchet and a pawl intermittent mechanism which produced all of the mechanical effects necessary to the proper projection of pictures, even by today's standards." [1]

The years moved on until 1872. Governor Leland Stanford, of California, horse breeder and statesman, contended with two doubting friends, James R. Keene and Frederick McCrellish, that at various gaits a horse at full speed took all of his four feet off the ground at

[1] Ramsaye, Terry. *A Million and One Nights*, Vol. I: p. 19. Simon & Schuster. New York. 1926.

once. The controversy brought about a wager of twenty-five thousand dollars.

To settle the wager, Eadweard Muybridge, a San Francisco photographer, was employed. Muybridge's first efforts to get a series of action photographs failed. The plates of the time had a speed of only one twelfth of a second.

In 1877 the experiments were resumed. The photographic plate was now fast enough to record the movements of a speeding horse. But shutters and lenses and the photographer were too slow. Muybridge got many photographs, mostly of fast-moving noses and tails! One vague picture, however, showing a horse with all four feet off the ground, spurred Governor Stanford on in his experiments. He decided to try to get various sections of the horse's stride by using a row of cameras.

The camera shutters were connected by strings which the horse was to break as he ran. But the strings broke at the wrong time and frightened the horses. Stanford controlled the Central Pacific Railway. Arthur Brown was chief engineer of the road. When Stanford wanted things he just asked his boys to deliver. Brown took Engineer John D. Isaacs from an important bridge job to help Stanford win his big wager.

Isaacs developed a method whereby the steel tire of a trotting sulky closed electrical contacts which operated each shutter of each camera in turn. The final number of pictures to a set was twenty-four. Ramsaye states that Stanford's expenditure was "something like $40,000." [1]

Despite the mechanical part played by Isaacs in

[1] Ramsaye, Terry. *Op. cit.*, p. 37.

making the result possible, fame came to Muybridge for years as the "first action photographer." He was fêted in Europe and later employed by the University of Pennsylvania for photographic research. He wrote a book entitled *Descriptive Zoopraxography*, or *The Science of Animal Locomotion.*

Inspired by the Muybridge pictures, Jean Louis Meissonier of France developed the Zoopraxinoscope. The theory of Persistence of Vision in Moving Objects was steadily developing in various hands toward practical motion projection, if not photography.

But now a giant step was to be taken.

In 1886 Thomas Alva Edison was perfecting the phonograph. To him came the idea of making the invention appeal to vision as well as to hearing. He and an assistant, William Kennedy Laurie Dickson, developed a cylinder-recording camera which photographed "start and stop" pictures forty-eight times to a second. For some years, motion photography was standardized at sixteen pictures to the second. This rate has been increased to twenty-four pictures per second for talking pictures, largely for sound recording reasons.

Edison's pictures were very tiny. They were photographed in spirals around a cylinder. But while his camera worked, it was obviously not practical. Edison had never tackled such a vexing problem.

Then came the notion of slotted strips of film being fed to the stop motion device, for motion pictures do not "move" steadily. They stop and start. The illusion in one's eyes, because of the Law of Persistence of Vision, does the rest, as we have seen. The size of the

motion picture frame today is exactly that which Edison measured out in 1888 on strips of sensitized celluloid furnished by John Carbutt.

Meanwhile, George Eastman of Rochester was working on a process to supplant glass plates in photography with cheap flexible roll film. When Edison saw the first Eastman film on September 2, 1889, he cried, "That's it! Now we've got it."

The first goal of all these experiments was a camera, the Kinetograph, and, Ramsaye says, "the Kinetoscope, a peep show machine in which Edison's pictures were exhibited. There was an inadequate unnamed projector at the time, but Edison's general manager wanted to sell the peep show machine, which was ready."

The Kinetoscope "fired the gun" for a race which was to take picture projection from the peep show class and put it on the screen. Experimenters were simultaneously at work in England, France, and the United States. They included Woodville Latham, Robert W. Paul, Louis Lumière, C. Francis Jenkins, and Thomas Armat. The latter was a particularly vital figure whose efforts, states Ramsaye, "really did the most to take the motion picture out of the peep show."

Edison himself improved his early device and introduced the Edison Projecting Kinetoscope. But he never achieved the practical talking picture he sought and his interest waned.

Out of this state of affairs, legal tangles were to be expected, and suits were filed by various claimants. A decade of dispute ensued, to be settled December 18, 1907, when conflicting factions, represented by the

Edison, Biograph, Vitagraph, Lubin, Selig, Essanay, Pathé, and Melies companies, pooled their patents and claims to special rights in the Motion Picture Patents Company. The General Film Company became the distributing arm for the members of the basic company. The most powerful single concern the motion picture has known had been born.

The motion picture took enormous strides forward on the impetus of two events which gave it extraordinary publicity. Edison would not hurry. His Kinetoscope was too late for the World's Fair. But on November 3, 1899 Biograph filmed the Jeffries-Sharkey fight, and in 1906 motion pictures of the San Francisco earthquake riveted more attention than all the dancing and "chase" and scenic pictures which had been produced.

But several independent producers resented the efforts of the General Film Company to control their destinies. Included in this fighting group were such pioneers of the film of today as Carl Laemmle, Jesse Lasky, Adolph Zukor, Cecil B. DeMille, and Samuel Goldwyn. Had a struggle not been necessary, it is possible that a number of cinematic advances might have been many years delayed. Struggle made keener the minds of ambitious men. And eventually these leaders soared above the General Film Company, which has long since been forgotten.

A familiar form of early picture theatre was a railroad coach into which audiences were lured under promises of "A Trip to China." The name of the device was "Hale's Tours."

Then came the "store show." Usually, it was simply a store with a few folding chairs. Early theatre operators, who were certain that "movies are just a passing fad," made no effort to keep their "theatres" either clean or comfortable.

But here and there about the country were far-seeing men who looked ahead. Among these was a young Canadian, Louis B. Mayer, who had purchased a store show at Haverhill, Massachusetts. He cleaned it, installed comfortable seats, and offered as his opening picture *From the Manger to the Cross*, a religious film made in Italy and far more ambitious than any American product of that time. From vision of this sort came the modern motion picture theatre, well lighted, well furnished, a welcome aesthetic addition to a community.

Credit belongs to D. W. Griffith for first proving that the public would accept long continued stories played by capable actors. His *Birth of a Nation* was a flame that set the whole cinema world ablaze.

Griffith and Cecil B. DeMille are credited with the creation of such routine photographic effects of today as the close-up, the flash back, and the backlight. These represent considerable advance over the drab, unrelieved flat lighting of the very first pictures.

DeMille tells an amusing story of his first attempt to get away from the use of "flat" lighting. He fashioned the first rude "spotlight" and, in a scene of *Warrens of Virginia*, he showed for the first time an effect now familiar, a man with his face strongly lighted on one side, and heavy shadows on the other. The effect

emphasized the dramatic value of a certain war scene.

But from DeMille's New York office came a wail from a too practical executive, "We pay these actors well. Why show only one half of their faces?"

DeMille answered quickly, "Don't you ever look at great paintings? That's Rembrandt lighting!"

The New York executive thought the phrase strongly descriptive. The picture was advertised as "the first to have Rembrandt lighting," and motion picture photography with its present emphasis upon artistic content had been born.

Under various producers and directors, the silent film advanced steadily in importance until 1927. Clever men found endless ways to make effective pantomime and inserted written titles to take the place of stage dialogue. Stage producers noted with alarm that it was increasingly difficult to get experienced actors. The best had gone to Hollywood or to the first Eastern studios established at Fort Lee, New Jersey. In New York, silent motion pictures scored greater success than most stage plays. *The Big Parade* ran for more than a year on Broadway.

The silent picture era developed some magnificent films. The following will probably always be remembered: *The Birth of a Nation*, *The Ten Commandments*, *Seventh Heaven*, *Broken Blossoms*, *The Covered Wagon*, *The Little Minister*, *The Hunchback of Notre Dame*, *Ben-Hur*, *The Four Horsemen of the Apocalypse*, *Quo Vadis* (Italian), *Cabiria* (Italian), *The Three Musketeers*, *Eyes of the World*, *Queen Elizabeth*, *Carmen*, *Civilization*, and *Abraham Lincoln*.

But, with the year 1927, a new era opened. A singer named Al Jolson sang and talked for part of a photoplay, *The Jazz Singer.*

The talking picture had been born!

Edison's dream had at last been realized. Speech and sight were united. Stories whose merit depended on delicacy of dialogue could now be made successfully.

"Action," all-important word of silent days, was still important. But now the subtle characters of Charles Dickens could really come to life, and Shakespeare on the screen could emerge from the written word to a pictorial reality.

Now in its second decade, the talking pictures can rightfully point with pride to such accomplishments as *David Copperfield*, *Romeo and Juliet*, *A Midsummer Night's Dream*, *Trader Horn*, *Sequoia*, *A Tale of Two Cities*, *Story of Louis Pasteur*, *Les Miserables*, *Little Women*, *Anthony Adverse*, *Last of the Mohicans*, *House of Rothschild*, *Henry VIII*, *Rembrandt*, *Maytime*, *Naughty Marietta*, *The Good Earth*, *Captains Courageous*, *Mr. Deeds Goes to Town*, *Grand Hotel*, *Little Lord Fauntleroy*, and *Lloyds of London.*

The screen has its faults, but during its short life it has achieved more aesthetic expression per year than any other art. It has been the only art to make a concerted effort by itself, and in itself, to raise general standards of taste.

But physical growth does prove solid popularity. Available figures indicate clearly that the photoplay is no illusory fad, no will-o'-the-wisp, but an integral part of the life of today, and the life of tomorrow.

The Truckee River, near Lake Tahoe, furnishes mountain and forest scenes

"Sherwood Forest," U.S.A. style, has been the site of many pictures

An operative cameraman adjusts his camera. Cover, or blimp, keeps in sound of camera mechanism

Karl Freund inspects a setting through a blue glass, with which he can judge cinematic color values

It has not supplanted the stage nor can it ever, for the stage has a place distinctly its own. And the stage, instead of being harmed by the photoplay, has grown in stature. Stage technique, spurred by motion picture accomplishments, has made great strides. The finest plays of the modern theatre have had a new vitality and originality, since the advent of the motion picture.

In the '80's and '90's, and even into the present century, stage plays followed a tradition that a play must be presented in three or four acts. Shakespeare, of course, had many scenes in his acts but as the theatre became a more massive structure of wood and stone, the changing of numerous sets became too costly, and stage producers sought economy by urging playwrights to tell their story with fewer acts and scenes.

Compare the plays of forty years ago with those of today. Plays still stay within three or four acts, but, because of revolving stages and more portable settings, six to ten or twelve scenes to a play are common, and plays have been presented with as many as twenty scenes. Of course this number of scenes, if they can be changed quickly, is an admission of the stage producer that the shift of locale germane to the motion picture provides a special advantage over the stage form of presentation.

For years, only the stage play was studied in schools. Today the screen drama is being included in high school and college curricula. Young people of the new generation are seeing and hearing motion pictures. It is their right to have answered the questions which arise in their minds about this art.

Thirty years ago a few hundred thousand feet of film were sufficient for a struggling "plaything," looked upon with contempt by people of the stage and not viewed with enthusiasm by its own adherents. Most of these cynically considered it a passing fad from which they could make a few thousand dollars and then get out. Today the industry in America alone requires two billion feet of film a year.

Thirty years ago if a film cost two thousand dollars to make, producers threw up their hands in horror. Today to spend two million dollars to make an adequate film presentation of *Gone with the Wind* is considered a normal expenditure.

Today in the United States alone 28,000 persons are employed in the production of moving pictures and nearly 300,000 in their distribution and exhibition. More than 150 different industries are stimulated by American motion picture expenditures, representing an amount of $200,000,000 a year.

The motion picture is rated by many observers as being among the first ten single commodity industries of the United States. It pays the government over $100,000,000 in taxes annually, spends $30,000,000 for insurance, and advertises to an amount of $77,000,000 a year in the United States and $33,000,000 annually in other parts of the world.[1]

These figures are not offered with any idea of artificially stimulating the importance of the film industry in the minds of those who read them. The figures given, and others, are available in standard books of statistics.

[1] Statistics supplied by Association of Motion Picture Producers.

The past of the motion picture, exciting as it is, is so short that the great accomplishments of the film form lie ahead, not behind. Undoubtedly this is one of the reasons why film making is an important interest and study for young people.

Film making is not set and established in its ways. It has traveled only part of its road. It is flexible, and alluring new vistas stretch in all directions from it.

3

A SINGLE-MINDED COMMUNITY

In order that we may understand the making of a picture today, we must know the past, and that we have reviewed. Let us assume that we have decided to visit Hollywood and that we are traveling on a plane westward bound from Chicago. Arriving in California, we pass over an enormous natural barrier, the Sierra Madre Mountains. We rise over their jagged peaks and coast down through lower levels into long, fruitful valleys.

We speed over orange groves, over little towns and farms scattered here and there. We come to Los Angeles, which, geographically, is said to be America's largest city. Like a carelessly thrown blanket, it spreads from the mountains to the sea. Some loose folds stray up canyons which cut deeply into mountains; others stretch to the edge of the blue Pacific. At the upper end of the blanket, sheltered by rolling foothills, lies Hollywood. We see palm trees along its streets, its mansions, and its little houses, many in Spanish plaster and red tile.

From the air, with the exception of its distinctive California atmosphere of Spanish houses and semi-tropical flora, Hollywood is very much like any other well-planned residential community. In fact, it is such

a community. A very small proportion of its inhabitants are picture people. Lawyers, doctors, and business men occupy most of the houses. Many Angelenos live for years without knowing that their nextdoor neighbor has a "face known round the world."

It is told that, one day while strolling near his home, Clark Gable met a middle-aged man living in that vicinity. Gable introduced himself.

"Gable? Gable?" said the man. "Are you by any chance a relative of the fellow that's in movies?"

But now we shall land at Hollywood. Hollywood is not the only place in the world in which moving pictures are made. It is not the only place in the world in which good moving pictures are made. In fact some poor pictures have come from this rambling suburb of Los Angeles. But the definite excellence of others has advanced the whole industry into the realm of higher art. Hollywood deserves its place in this volume because more pictures are made here than elsewhere, and 80 per cent of the greatest motion picture technicians live in and around Los Angeles.

This much-discussed subdivision of a large city is at once the pot of gold at the end of the rainbow and a port of frustrated desires. To it many come, but from them few are chosen. It gives rewards to a handful of persons. It says "No" to thousands. It is one of the world's most interesting and glamorous communities.

Where else, for example, could you find a case of a Robert Taylor?

In 1933 this personable young man appeared in a senior class play at Pomona College. Seen by a talent

scout, he was signed as an apprentice actor by a large studio. As late as the winter of 1935, his top salary was about fifty dollars a week. Today, and by the week, his salary is in four figures.

But let none be misled by such examples. They represent only the rare Aladdin's lamp qualities of Hollywood, not its basic realities.

As students observe the details of motion picture making, it is understandable that many of them should wish to be a part of a business which is so unusual, so varied, so romantic in its implications. But general education and personal charm mean relatively nothing in Hollywood. A good architect, a fine dressmaker, or an expert trainer of fleas has a better chance of getting a position than the most delightful Bachelor of Arts who ever received a college sheepskin.

For example, a graduate of a large western university applied for a position. He spoke of his majoring in English and his work in the college dramatic club; but his recital left his hearers cold. As he was about to leave his audience with a man who hires and fires, he casually mentioned his hobby. He and his father were collectors of firearms. From the age of fourteen, he had been an expert on guns of all nations and times. He was given a job immediately.

Today, he has been in his studio five years and has studied very carefully. Undoubtedly he will, sooner or later, have an excellent place in the production department. But he was given his original entree, not for his general knowledge, but for an almost forgotten hobby. He had mastered a valuable and specialized study.

The constant demand of the film industry for more different trained hands than any other industry, art, or vocation is something the casual observer of filmdom never seems able to grasp at first sight.

When one thinks of motion picture making, his mind flashes to actors, directors, and writers, but numerically they are only a fraction of the whole. One year one house painter made a contribution considered far more significant than any single "bit" of acting and direction or writing. He invented a type of enamel paint which looked as if it had a hard surface, but it was really porous, and sound could pass through it. This eliminated bad sound recording effects when sounds "bounced" off the old type flat enamel.

"Windjammers" went off the high seas years ago, with the arrival of the modern steamship. But every studio has its expert sailors who can rig and sail sailing vessels of every description from a small schooner to a great brigantine of the early eighteenth century.

Actors and actresses, however, comprise less than 8 per cent of the so-called motion picture colony of Hollywood. Acting offers fewer immediate opportunities to the ambitious than its related vocations. Paper hangers, cosmeticians, hairdressers, sculptors, mechanics, or chemists are more frequently needed than actors themselves.

But, because a Robert Taylor, a Fernand Gravet, a Jean Muir, or a Deanna Durbin appears out of thousands, every good-looking young man or young woman in the country seems to think that the quickest road to film fortune is through a nice figure, beautiful teeth, and a lovely smile.

One recalls the lament of a famous casting director. After a long day spent in looking at applicants and trying to fill a certain blank in the cast list of a picture about to be made, he said in some desperation, "I'll trade you twenty Grecian profiles for one good case of St. Vitus's dance!"

He was absolutely serious. He had a part in which this particular physical affliction was necessary to establish a certain character point. While good looks, both masculine and feminine, were a drug on the market, what he needed for his purpose was a case of St. Vitus's dance.

Many are deceived by the notion that beauty is essential to success in Hollywood. It is not. Talent is the chief prerequisite, and it is, as we shall see, an elusive quality. Those who wish to enter the film industry should consider carefully two famous Hollywood "don'ts" for would-be actors or actresses.

Don't come to Hollywood unless you have real ability in acting. Scouts from the studios are constantly traveling in all parts of the world. If talent appears in little theatre or amateur performances, they will find it and give it an opportunity.

Don't come to Hollywood unless you have enough money for a year's stay. There is little chance for those who disregard rule one, but there is less for those unprepared for self-maintenance.

We find that the studios in Hollywood are widely scattered, clinging to the fringes of residential districts, like other manufacturing enterprises. Once, when Hollywood was smaller, there were studios in its very

center. We see a huge, flat, open space, the first site of the big Paramount Studio, now situated two miles away, next to the big RKO plant. Today this ten-acre tract is surrounded by twelve-story skyscrapers. Fifteen years ago there were two straggling half-painted board buildings in the center of a profitable orange grove.

In 1913 two ambitious young men, Jesse L. Lasky and Cecil DeMille, had rented the carriage house which once stood at a corner of this grove. Here they established their studio. They had money enough to rent only half of the barn, and when the owner decided to wash his carriages in the other half, the water flooded under the partition into the "studio."

But regardless of handicaps, DeMille and Lasky started what is, today, one of the greatest companies in the business. These men had imagination, energy, and foresight. They possessed the qualities which assert themselves in the face of handicaps, and they were pioneers in an industry which will always value pioneers.

In fact, as one considers the early leaders in the motion picture industry, one sees a direct parallel to the men who made the first achievements in all the other great industries.

The DeMilles, the Laemmles, the Warners of the early days of pictures, dared financial ruin because they saw a vision of the future in this strange new art development. We have said previously that most of the early day investors in film companies were cynical about the very business in which they were engaged. They saw in it only a chance to make a little "quick money" from a fad which would pass.

But these men passed out of the business long ago, and present-day studio workers cannot even remember their names. But they do remember the real pioneers, the men who risked everything because they had faith that the weak thing they took in their hands would grow from a sickly baby to the stature of a giant.

The old Warner Brothers Studio, now seldom used because of their newer, finer place twelve miles away in the sprawling San Fernando Valley, is the nearest of the big studios to Hollywood proper. Another studio within Hollywood, the old "Fox lot," is at present used only for emergencies, the newer Fox plant having been built in Westwood Hills, miles away.

Just outside of Hollywood is the United Artists Studio where "Doug and Mary" made their greatest pictures. What seems to be a little village of English houses is Charlie Chaplin's Studio. To the north, several miles distant, are the rambling buildings of "Universal." This is one of the oldest studios. Among its historic landmarks still standing is the old Notre Dame cathedral set used in the production of *The Hunchback of Notre Dame*. Near this plant are the new Warner Studios.

In the center of Hollywood, an old setting is being torn down, a setting used in the production of *The Four Horsemen of the Apocalypse*. This will transform the acreage of the long unused Metro Studio into a building to house the more recent art of radio broadcasting. Miles away to the northeast, among old-time sets, one sees a gaudy building studded with lights. A cabaret now stands in the center of the former Mayer Studios.

A merger of two great companies caused the close of these smaller plants in 1924 and the removal of their personnel to the eighty-two-acre Metro-Goldwyn-Mayer Studios at Culver City, ten miles southwest of Hollywood. Not far distant one finds the reproduction of Jefferson's plantation, "Monticello," which hides behind its colonial façade the stages of Selznick-International. Further still, down a wide boulevard are the Roach Studios, laughter headquarters of the juvenile "Our Gang."

It has been said that Hollywood, both in the residential and the business sections, resembles any other American city. But there are differences.

One goes into a restaurant and he may see posted there a typed "directory" of telephone numbers. One number permits us to get instantly in touch with the owner of "Joe, the best trained brown bear in captivity." Another man can deliver "any required number of one-armed or one-legged men." A plastic surgeon "guarantees to reshape a too-large nose within three weeks, and with no pain or discomfort."

For nearly a mile on one long street there are substantial buildings. They are the offices of "agents." These agents keep actors, directors, writers, producers, and the higher-paid cameramen, sound engineers, art directors, and other workers in jobs. Salesmanship of "talent" is their profession.

Perhaps the most pretentious façade in Hollywood is that of an internationally known cosmetic concern. Thousands upon thousands of dollars have gone into its imposing marble front and its luxurious interior. This

concern does not sell one tenth of one per cent of its output in Hollywood. But its products are good and are used by stars, and its façade, and its Hollywood headquarters, make excellent advertising.

Down Hollywood Boulevard, a street on which, if one stands long enough at one corner, he will see all the "great" of filmdom, comes a highly polished delivery wagon with barred sides. It is filled with yelping dogs. Its owner is a professional animal trainer, and he can deliver "dog actors" by the score, on a minute's notice.

What is that terrific report? It is a huge five thousand kilowatt light globe which has rolled from a passing truck. It was on its way to be used in a night scene. Look at any light globe used in homes. Think how that globe would sound if it were broken. Then recall that the one just heard is about the size of two watermelons.

Nowhere in the world—in the early morning, at noon in cafés, at night on the way home—can one see so many hundreds of people wearing grease paint, beards, and mustaches. But no Hollywoodian gives such people a second glance. They are as much a part of the local scenery as workers in blue denim overalls are at the time of any change of shift in the vicinity of the Carnegie steel plant at Pittsburgh.

Here is a huge warehouse, one of several that holds film for use at the studios—a total of two billion feet for a single year, or a little less than thirty-eight thousand miles, or one and one-half times around the world.

A modest plaster building proves to be the headquarters for a company which sells camera lenses. A

salesman can display on a table before us a dozen complicated pieces of glass, the total value of which will be many thousands of dollars.

In an enormous twelve-story building, some thirty thousand different costumes of every known historical period are stored. And this collection, the largest, is partially duplicated in smaller ones held by individual studios.

In street scenes like these, in unique collections of almost every description, in the great variety of peoples representing practically every nationality, Hollywood differs from every other city in the world. In any city in which films are made—London, Berlin, Paris, Bombay—similar materials are in greater or lesser degree available, but only in Hollywood is there such a profusion of the strange, distinctive, fantastically varied impedimenta of picture making.

Having flown over the city, having walked through its streets, and having had a kaleidoscopic view of its life, we are now better prepared to study the actual work of a studio.

Where shall we start? With some outstanding star? Not at all.

We hear much about stars and certainly they are the most visible evidences of picture making, but much must happen before they can step before the cameras with their contributions, and before we can meet them. Before the start of a picture, the first thing to be sought is a story.

Stories, appealing, interesting, enthralling stories, rare examples of human life caught at high tide, stories rang-

ing from Shakespeare to Dashiell Hammett, from the nonsense of a Marx Brothers comedy to the tense drama of *The Good Earth*, these are and will always be the cornerstone of the film business. Without fine stars, sensitive supporting players, even the greatest story cannot come to life on the screen. But without fine stories not even the greatest and most popular star now living could continue his popularity for six months!

Hollywood depends upon stories. No studio could continue its work without an ample and varied supply of stories from which to draw. These, the result of man's most fanciful dreams and most inspired visions, must be discovered and adjusted to the need of the studios.

Dreams! Remember that word. In a sense novels are merely some man's dreams, put into written words. Plays are dreams transformed into actors walking to and fro across the physical stage of a theatre. Motion pictures are dreams transmitted to a metalized screen, there to be seen by more millions than can be reached by almost any other means of communication.

All phases of literary art are closely linked with dreams which spring up like the Phoenix in the mind of some man or woman. All stories are integral in the warp and woof of the photoplay fabric, and they provide the reply to Hollywood's perennial request, Dreams Wanted.

4

DREAMS WANTED

Have you ever awakened in the night, thrilled over some marvelous dream which came to you in your sleep, enthralled by its drama and its promise of riches and glory? Of course you have. When we were very young, about the time when we still believed in Santa Claus, we looked forward hopefully to a repetition of the same dream; and then again the same dream on a third night. For, says an old legend, if we dream the same dream three times, it will come true.

Back of our delight in dramatic dreams is man's age-old desire to leave his immediate environment, if only for a few moments, to mingle vicariously with people doing unusual, exciting, and thrilling things. Motion pictures are not unlike these dreams. They afford an escape from a possibly drab or monotonous environment. They serve as a magic carpet which transports us from commonplace realities to a realm of romance and imagination. They bring foreign lands and customs into our lives, take us back into the colorful past, and lead us into the future.

We smiled tolerantly because Woodrow Wilson, college president and War Executive of our nation, loved vaudeville jugglers and "penny-dreadful" detective and mystery stories. Indulgence in these things in no man-

ner affected his learning. They provided for him a needed relaxation.

Every absorbing story is a dream which some clever man or woman draws from his imagination and puts on paper. The "story scouts" of a big, modern motion picture studio might very well be called "dream hunters," for they roam all over the world searching for stories.

One story was read in a native magazine by a salesman traveling through Czechoslovakia, and his suggestion led to its purchase and the filming of a successful picture. In an Italian theatre a woman attended the performance of a new play by an unknown author. She rose from her seat and went to a cable office. There she wired a studio. Within three days the play had been bought for picture production.

In New York City, large film companies employ staffs of readers who go over new plays and novels in manuscript before they are produced or published. The best of these manuscript stories and of new magazine material are sent to Hollywood for final reading and decisions concerning their availability.

Two comments sometimes heard amuse professional story editors. A person will say, naming a great play or novel of past popularity, "I wonder how the movies overlooked that fine story." The chances are 100 to 1 that the files of every studio in Hollywood, London, Berlin, Paris, or Rome contain a synopsis and a reader's full report on this particular tale. In similar manner professional story scouts smile when they receive hundreds of letters immediately after a new novel is re-

Dunes near Yuma, Arizona, have often doubled for the Sahara Desert
California terrain is transformed into North China for *The Good Earth*

The famous Busch Gardens in Pasadena, California, about twenty miles from the studios, often used for picture locations

leased, or a new serial story has begun publication in a magazine.

This happened before the picture *I Loved You Again*, from a novel by Octavus Roy Cohen, was produced. The story had been received with favor by readers when it appeared in a popular magazine. Scores of letters had reached every studio suggesting various stars for the principal rôles. But the story had been bought from publisher's proof sheets months before the magazine appeared on the newsstand. By the time the general public reads a new novel, the chances are 500 to 1 that in the files of every studio there is already a synopsis of it and a complete analysis of it in a reader's report.

When the play *Grand Hotel* appeared on the New York stage hundreds of people wrote suggesting its possibility for motion pictures. But it had been bought for motion picture production months before, and it was film money that had financed its New York stage presentation. This was the end of a two years' search by a studio reading department.

The late Irving Thalberg had expressed a desire to produce a picture of large physical scope which would be so constructed that it would give excellent parts to not one or two stars but to several. When a studio reader discovered a note concerning a German novel which was about to be made into a stage play, she scented the end of a long chase. The novel and the play were sent for and translated into English. It proved to be the exact work Mr. Thalberg had in mind, and negotiations were put under way by cable for the picture

rights. It then developed that before these could be obtained, the play must have a New York stage production, so the play was backed by the company which later produced the screen version. Both were interesting milestones in theatrical history.

The keeper of the story files in the largest of the American studios boasts that no one has ever named an author whose full dossier she does not have in one of her steel cabinets. And no one has ever succeeded in naming even short stories published in obscure magazines of small circulation of which she does not have a record. In this one library alone there are two million stories carefully filed.

Attached to each story is a short synopsis prepared by the reader and his report on its availability for picture use. There is also an elaborate cross index listing the plot structure, the dramatic possibilities, and the characteristic comic or tragic elements of the story. A study is made of the characters in the story and their relation to the available stars and featured players.

Suppose we should want a report on the desirability of filming one of the various plays of Shakespeare. Within two minutes this woman could and would place in our hands a carefully typed file card (the same kind of card a grocery store manager might use to keep track of an inventory of canned beans and smoked ham), listing every play Shakespeare wrote and referring to a separate file which has a synopsis of each play and a reader's report concerning its essential screen values.

This was tried once on a distinguished British novelist who came to America to convert Charles Dickens'

David Copperfield into a screen play. When he was shown his own card he pointed his finger to the last item.

"But," he said, "the proofs of that story were struck off by the printer only a week ago."

The head reader answered mildly, "We use the air mail!"

Motion picture writing is definitely one of the hardest forms of composition. It requires an intimate knowledge of the essential craftsmanship of both the stage play and the novel. But it must pass beyond this, not only into an understanding of, but into a genuine subconscious instinct for, the intricacies of motion picture technique.

Many amateur writers, failing to get their contributions accepted for publication in either a "pulp" or a "slick" magazine (a distinction based on the class of paper used by two distinctly different classes of periodicals), turn to the studios with the mistaken belief that the requirements of the motion pictures are less stringent. Unfounded plagiarism suits find growth in such soil.

It has become the general practice for studios not to read unsolicited manuscripts wherein the writer has not given himself the usual legal protection by copyright, either directly or through publication. In 1936 there were 525 feature photoplays made in the United States. In the same year, the world around, more than twenty thousand short stories, novels, and plays were accepted, in a score of languages for magazine use, stage production, or book publication. From the publication or stage

production alone this gives the talking picture studios an enormous choice of 40 to 1.

These twenty thousand manuscripts form a reservoir of vibrant ideas whose dramatic force has been tested in an important manner by means of publication or stage production. And there are forty of them for every photoplay! It is not strange that the studios protect themselves against unfounded plagiarism suits filed by untrained amateurs, by refusing to open or read any manuscript which has not been legally protected, or previously solicited.

When stories originally planned for the screen are accepted, they have generally been written by trained writers, playwrights, or novelists, working directly within the studios. These ideas may be generated by such trained writers themselves, or by a producer, or a director, or a star. The percentage of stories originally written for the screen compared to photoplays adapted from published material varies, but a fairly normal percentage is about 30-70.

Frequently a screen play originally conceived for the screen deals with some movement or dramatic situation current in daily news. At the time of a wave of newspaper publicity about prison reform, *The Big House* was written by the thoroughly competent Frances Marion. Or such an original may be about a period or happening of which the fiction supply has not been entirely adequate, or properly focused for cinematic use. An example of this is seen in the most successful commercial photoplay of 1936, *San Francisco.* This was written originally and directly for the screen by

Robert Hopkins and Anita Loos, author of *Gentlemen Prefer Blondes.*

Current events frequently influence the selection of motion picture stories. Just before the coronation of King George VI, one studio released *The Prince and the Pauper,* an adaptation of a story by Mark Twain. It brought to an interested public the pageantry and ritual of an English coronation.

Original stories are often founded upon some historical character whose biography lends itself to dramatic presentation. *The Story of Louis Pasteur* and *Rembrandt,* the latter produced in Great Britain, illustrate this usage. The question might logically be asked, "If the studios make original stories based on historical characters, could not an amateur prepare a film play on the life of such a person and have it accepted?"

A negative reply must be made because there is probably no more expert and difficult writing job in the world than the transformation of biography into the medium of exciting drama. It is a harder task than writing fiction. In fiction, the imagination may roam unchecked, but, in fitting biography into the medium of the screen, one is bound by inescapable facts. These must be deftly woven into the framework.

To do this requires long literary training and that quick instinct for the dramatically right and wrong, which becomes second nature to a competent professional writer. Contrary to general opinion, writers are very seldom "born." They are developed from sheer perspiration, hard work, and long experience of trial and error. Before he sold his first story, Rupert Hughes

collected so many rejection slips that he claims he "could paper the side of a wall" with them.

The central ideas sought by studio story readers are strong, realistic, pictorial, and human. Lack of a focused central dramatic idea is the major fault of most amateur stories. If that idea, or basic story situation, has novelty and force, and if it can be expressed pictorially in an interesting manner, development into a fine photoplay is possible and probable. It matters not whether it was adapted from a play or a novel or conceived initially for studio purposes.

Action is the password of all drama and most especially of moving pictures. If a photoplay does not move, if its forward dramatic progression is halting or broken, it is of little entertainment value. It takes a trained mind to construct human conflicts which in their consecutive passing through a story give the illusion of reality.

Most amateur writers lack this ability, and it is a common fault among them to try to disguise weakness of plot by a recourse to beautiful description. An experienced writer like Sir Walter Scott could balance his materials so that the long but very beautiful description of a forest glade in *Ivanhoe* enhances his plot development without retarding action. The average amateur, however, resorts to description usually because he has nothing more vital to offer.

One director threw down the last of forty manuscripts he had read in one week. Disgustedly, he said, "I will trade you forty gorgeously beautiful Hawaiian sunsets out of all the collection for one good sock in the jaw!"

Victor Fleming, the director of *Captains Courageous*, *Treasure Island*, and many other successful films, began his film career as a cameraman. Today he seldom looks through the finder of a camera.

"I know," he said, "that if I do I will instinctively start grouping my people to get the most charming pictorial composition. What I must do is to interest folk in the action of my characters, not scenery or set, which, no matter how beautiful, must remain unobtrusive."

Thousands of stories, and every short story of every monthly or weekly magazine of high or low degree, are read by a corps of trained readers. A large room, fitted with comfortable overstuffed chairs, is the headquarters for the readers of one typical studio. These are former dramatic or literary critics, or advanced graduate students in literature. They must in general be very familiar with literature of all periods.

These readers submit each story to five fundamental tests. First, do the central characterizations fit one or more of the stars or featured players under contract to the studio? Second, will there be difficulty in adapting the story to the talking picture form? Third, does it have reasonably attractive pictorial elements? Stories with a monotonously drab background may be interesting reading when written by a genius, but they are likely to prove faulty for pictorial presentation. Fourth, is the story of a type that has a wide public appeal? Fifth and finally, can it be exhibited within a limit of two hours?

Reading professionally is hard, concentrated work.

Undoubtedly, it could be unalloyed pleasure if the readers had only to read the best stories and plays which are published each year.

"But," said one of them, "we must read everything, and out of twenty thousand stories a year, some of them are bound to be rather terrible."

Readers, of course, have ambitions like all of us. Most of them employed in the work follow it as a stepping stone to creative writing. An example of a reader graduated to writing is Claudine West, responsible for the scenarios of *The Barretts of Wimpole Street*, *The Guardsman*, *Smilin' Through*, *The Good Earth*, and many other strong photoplays of genuine literary merit.

To those interested in the qualifications for a studio reader, a portion of a letter is offered. This letter was recently sent by a prominent studio story editor to an applicant for a position:

> "All of our readers have taken one university or college degree, some two. This background is essential. I find my best readers are drawn from families who have lived always with the finest books. . . . Almost all of them read one or two foreign languages as well as they read English. Some of them have had fine experience before they came to me, reading for the great publishing houses, or play producers. It is the critical, analytical mind that makes the best reader. . . . The essentials are at least four years' study of English literature in a fine university, and a reading knowledge of one foreign language at least."

Nothing could be more intense than the application of a studio reading department. If a good novel or play is overlooked, the discarded story would be quickly bought by a competitor. If one of these proved an outstanding success, the oversight would stand as a blemish on the professional name of the reader or head of the story department.

But studios do not discourage the efforts of new writers. They take great delight in the discovery of a new writer of exceptional merits. No barrier is raised against the work of anyone whose method of presentation shows that he has passed the primary grade in the art of writing. Studios, however, are too busy making a regular succession of pictures of high merit to teach lessons in writing. They seek, rather, writers who have proven their ability by publication, and such tested authors find their work treated with eager, absorbed attention.

Players and directors watch closely every move of a competent story department, for their livelihood and their professional reputations depend on the selection of adequate stories. Every night as they leave the studios they have scripts or books under their arms.

After *Mutiny on the Bounty* was bought by the late Irving Thalberg, not a copy could be found in a Hollywood book shop, for all had been bought by ambitious he-men actors of the dozen big studios. The book shops were sorry when finally the main parts were allotted to Charles Laughton, Clark Gable, and Franchot Tone, for sales of the volume fell off at once!

No purpose would be served in listing here the hun-

dreds of great authors who have contributed to the screen. It is evident that the screen has taken adequate advantage of its ability to draw from the novel, the play, and the short story. From Shakespeare to Marc Connelly, from Dickens to Clarence Budington Kelland, from classical writers to the contemporary, the screen in its resort to the finest writers has shown evidence of an approach to literary maturity.

The studios are to be commended, for they have not been provincial or narrow in their story search. They have taken prodigally from the greatest literature of all the world and of all time. Stories from Germany, from France, from England, sent out to the enormous audience of the screen, greater than that of any other art, have emphasized that all great art is not national but international.

Partially because it is easier to pay a few dimes to see a motion picture than it is to pick up and read a heavy book, thousands upon thousands of people are, through motion pictures, being introduced to fine literature for the first time. Many of those who went to see the picture, *Anna Karenina*, did so because they were attracted by the name of Garbo over the entrance. But once in the theatre they discovered Tolstoy.

Between the time that the picture production of *David Copperfield* was announced and the period of its exhibition, the public library of Cleveland was forced to buy seventy-four additional copies of the book. The school librarian of a large city system reported that he added four hundred copies of the work to his school collections during the same period.

When a film company announced in the fall of one year that the photoplay, *Romeo and Juliet*, would be ready for exhibition by summer of the following year, scores of high school English teachers arranged their courses to bring the study of this play closer to the release of the picture. They did this as part of the growing recognition by educators that the presentation of great works of literature on the screen inspires students to read these works with more intense interest.

Libraries have grown more and more sensitive to the public interest in filmed literary classics. The Minneapolis Public Library reported exceptional interest in a special file it keeps of the latest reviews on the best motion pictures. The Cleveland library, previously mentioned, and others provide tables of supplementary reading for those whose imaginations have been fired by the project of translating a literary classic into screen form.

Let us assume that the impossible and unusable material has been taken from twenty thousand possibilities; that several scores of excellent stories are ready for inspection by the executives. Let us follow these stories into a "story conference" and see the next step in the important activity of selecting and preparing a talking picture for actual production.

5

THE STORY IS SELECTED

There have been times when an individual star, financing his own company, has had the last word in every phase of production. A few directors have taken this great and heavy burden entirely upon their own shoulders. Sometimes, noted writers have attempted the task of making a picture entirely by themselves. These efforts have met with both success and failure. There will always be artists capable of efficiently supervising a picture singlehanded.

But for the general bulk of production, a formula has been effected by the result of trial and error through the years, a formula that seems to get the best values from each artist. By this generally accepted method the head of the studio—he may be a Louis B. Mayer, a Charles Rogers, a Darryl Zanuck, or a Jack Warner—stands at the dividing line between the financial and the creative sides of picture making.

It is his job to sense the commercial values in any particular story. He must weigh these values against past evidence and make a decision. He must decide whether the story in mind has sufficient public appeal to return the cost of the investment it represents.

Directly aiding the head of the studio are from six to twenty associate producers. They form the immediate

connection between the "man at the top" and the directors, busy at their work of creation on the stages. Inasmuch as he seldom gets publicity and is much less known to the public than the director, the function of the associate producer is rarely understood by persons not actually engaged in film making.

The associate producer is the one man in the studio who follows the picture through every stage, from the initial purchase of the story, to the shipping of the last prints to "exchanges" conveniently placed at key geographical points, from which they are rented to theatres for exhibition.

An associate producer must be a combination of a shrewd business man and a sensitive creative artist. He must be sensitive to the enthusiasms of his writers, his directors, and his stars, and yet he must remain conscious that pictures have to be made within a cost limit, that great literary classics cannot continue to be made if their cost is so great that their theatrical exhibition does not return the investment.

Usually an associate producer has several pictures in preparation or production at one time. Because his work is so similar to that of the editor of a large newspaper, his contribution never gets the attention, praise, or credit it rightfully deserves.

The most popular job in a studio is that of a director. The director is not responsible for every tile in our mosaic; but he does control the artistic values of more of them than any other single individual in the studio. His work is definitely, often spectacularly, creative.

That the differences between the director and the

associate producer may be clear, we may note that the associate producer works in his office, that the director works upon the stage.

The director might be compared to a chef. He takes varied emotional ingredients and blends them smoothly and deftly into a delectable story concoction. If a picture be well directed, its audience should never be conscious that there was a factor of direction.

A good director does not burden his star with worries of tempo changes between scenes. These he adjusts beforehand, leaving the actor free to study the creation of each scene. Both the director and the star have more than sufficient duties of creative import. The details of a production must be executed by a staff of helpers. This is why the associate producer system evolved.

Few directors could read the enormous mass of stories which pass through a studio story department and still give to direction the concentration it requires. The added worry of production costs interferes with their directorial abilities. Therefore, a director today, except in a close advisory capacity, does not start with a photoplay until after the story is purchased. Neither does he follow the picture through all the complications of cutting and editing after the last scene is "shot."

Selection of stories and the supervision of costs and editing are among the responsibilities of an associate producer. There are several methods of placing selected stories before associate producers.

Some producers make their selections by reading the full stories themselves. But such men, under stress, rarely find time to make more than a very few pic-

tures a year. Others have private readers who consult with their chief concerning possibly suitable stories for his particular type of operation.

Many observers consider most effective the system which has reached its best fruition in the hands of a charming, gray-haired woman named Kate Corbaley. Her method is suggestive of the time when early sultans called upon their storytellers for diversion during idle hours. But storytelling in studio style is not the diversion of anyone's idle hours, but serious business.

Mrs. Corbaley, a Stanford graduate, represents perfectly the kind of trained story technician most successful in studio work. Family conditions placed on a young wife the full responsibility for four infant girls. A talent for magazine fiction kept the wolf from her door. After this she spent years in writing screen stories in the early days of the motion picture.

But it soon developed that Mrs. Corbaley, fine creative writer that she was, possessed a much more valuable talent than writing. She had a "nose" for "picture values." She could read a story, quickly analyze it as it might appear, and translate it first into the silent, then into the talking photographic medium. Thus developed the system of telling key stories to associate producers.

A three- or four-page synopsis of a long novel is usually pedantic. A producer, responsible for several millions of dollars in costs each year, is seldom able to read each of the three hundred best stories chosen from each year's supply and give attention to other equally important executive duties involving the expenditure of millions of dollars.

Of course a producer must know their dramatic values, for they provide his livelihood. To insure this, the "story conference" was evolved. It frequently follows a breakfast attended by the associate producers.

Mrs. Corbaley sits in the center of a ring of men. She takes each story and tells it, not as it was written in its original form, but with suggested variations that might make it particularly acceptable for pictures. She has a finely trained, well-modulated, low voice. Through long practice she knows the best selling points of each story and she stresses them.

By this method she exemplifies what the minstrels knew centuries and centuries ago, that for storytelling the printed word is inferior to the human voice. Long before the art of printing was developed, people received their information from the few who could read. Often these men went from court to court and told the news of the day or sang of some heroic achievement.

In ancient Greece the early poets sang to the accompaniment of a lute. In the Middle Ages, the troubadours of France, the minnesingers of Germany, and the strolling minstrels of England entertained the courts with their songs and stories. They served as a means of communication. Even the few nobles and priests who could read preferred to get their daily news and fiction from the strolling minstrels. The work of the modern studio storyteller carries out in twentieth-century form the psychology which made the work of these early minstrels so popular and so effective.

The dozen men who listen to Mrs. Corbaley are all specialists. Each is an authority in a different line. One

William Powell and technicians wait while repairs are made to the make-up of Luise Rainer

Sound recording engineers with portable recording set placed in a large truck. A rural talking picture location can be seen.

is attuned to music. Another is keenly sensitive to strong, direct, melodramatic conflict. Another, his lips often curling up at the ends, has an irresponsible sense of humor, an immediate instinct for the comic. Another, dapper, exceedingly well-groomed, of Continental background, knows best the stories of a sophisticated kind. Another revels in complicated mystery stories.

Discussion of each story immediately follows the conference. Each man raises points from the background of his special field. Out of this general conversation surprising things may evolve. A story originally considered tragic may develop an overwhelmingly comic slant. And one believed quite sophisticated may prove to have its best values resting on a solid, homespun, realistic basis.

Results seem to have proven the efficacy of making verbal decisions concerning the drama. This system has produced in the past a variety of pictures such as *Grand Hotel*, *Trader Horn*, *The Thin Man*, *Naughty Marietta*, and many others, all of which have been successful.

After tentative selections are made of possible stories, each associate producer discusses them with his directors and with the stars best suited for the principal rôles. If all are satisfied, negotiations for the purchase of the stories begin.

The process of story selection may require months, but competition for the more popular properties sometimes assumes the speed and excitement of a thrilling horse race. When it is known that several companies covet a certain story or play, action comes quickly. De-

cisions are made about the values of the story for the production program of each studio, and bids are placed by telegraph. In some cases contracts have been sent by wire photography to hasten a purchase.

Often purchases develop strange complications. *Lullaby*, a stage play by Edward Knoblock, was made into the picture *The Sin of Madelon Claudet*. This won the award of the Academy of Motion Picture Arts and Sciences for its year. Knoblock was traveling in Europe at the time of the purchase, and a studio representative followed him over a considerable portion of the continent before obtaining his signature to the contract.

It took four years of work, 1929-1933, to clear the many legal tangles surrounding the talking picture rights to *The Merry Widow*. The musical rights belonged to Franz Lehar, easily reached, but the libretto was collaborated upon by several men whose rights had fallen into various hands. To trace them all took many years and a sum of money which amounted to a goodly percentage of the sales price of the musical success.

Luck alone saved a lengthy delay in the purchase of the Arctic book *Eskimo*. A representative sought eagerly for huge, brawny, one-legged Peter Freuchen, most spectacular in appearance of all Arctic explorers. He caught him just as he was leaving a Paris café for a new exploration cruise to the North which would have kept him from civilization for four years.

When the search leads to a successful play, such as the London stage mystery success, *Night Must Fall*, there are usually no bars—except price! Producers ex-

pect to pay a high price for a current stage hit, for it has already proven its ability to attract and to entertain people. The next question involved, is, "Will it make a good picture?"

Some books are "naturals." They have the pictorial quality, the breadth of action, and the variety of character essential to any good motion picture. *The Good Earth* and *Anthony Adverse* are examples. People were familiar with these novels. Their stupendous sales guaranteed public interest. For such inspired, extraordinary stories, there are usually no complications, except those of competitive bargaining.

With stories not protected by modern copyright, stories in "the public domain" by virtue of exceptionally long life, the problem is different.

A registration office in New York makes almost nonexistent among American producers the possibility of several versions being produced at the same time.

Suppose three producers simultaneously decide to make a story. They write, or wire, to the registration office and their request is stamped with the day, the hour, and the minute of its arrival. If three requests are received during the same day or the same week, the producer first making the request is given the right to film the story.

Every studio, like a good farmer, stores away some portion of his "story crop" for a rainy day. Each studio must do this in order to protect itself from the uncertainty of the market; hence, all stories purchased are not used immediately.

The story market fluctuates, for authors are uncertain

individuals. Sometimes there is a feast of stories for months. Then for no accountable reason a famine occurs, and for this reason it has been found a wise policy to leave an adequate margin. Story departments must buy in advance of their needs.

For example, a studio which uses only fifty stories a year never permits its stock to go below one hundred and fifty. Further, a story which is mediocre for an existing star, may prove a flaming "ball of fire" under the inspiration of some new comet-personality. No one thought much of a story called *Three Smart Girls* until along came a girl called Deanna Durbin. For her the story fitted like a beautiful gown and seemed to reflect her own charm.

Weeks, months, sometimes years of work and conferences involving many minds are required to find and select stories. When the picture version is made, people leaving the theatre often exclaim, "Why, it isn't like the book at all!"

Experienced producers, hearing such remarks, shrug their shoulders in mock resignation, for it is difficult to explain that the screen play is a different expressive medium, related to, but unlike either of its distant relatives, the stage play, or the novel. The casual visitor to a photoplay seldom understands these differences. But in them one finds the reasons for the amazing growth of the photoplay, its present solid place in public esteem.

6

WHY STORIES ARE CHANGED

THE NOVEL, the stage play, and the talking picture demand three different forms of writing. They are alike only in that each uses words to gain emotional effects and to establish an illusion of fiction, or to give a rational presentation of fact.

The novel and its miniature, the short story, are confined to the written word. The effect of these forms must be secured entirely by the emotional reaction of the reader to printed symbols. It is not necessarily bound by restrictions of time or place, plausibility or possibility, a fact substantiated by the enormous popularity of Jules Verne's *Twenty Thousand Leagues under the Sea* and of the Tarzan novels. The most successful novels have strong action and clear plots. Occasionally, so powerful is a pen in the hands of a great writer that stories with weak plots succeed because of brilliant word imagery.

It would cause controversy for one to name ten English classics which will never be seen on the motion picture screen. But they exist, and any student, teacher, or amateur expert in English literature could easily prepare his own list. The stories in mind are excellently written, but beneath their words there remains an unsubstantial shell. In such stories, great as they are in

their own genre, there is not enough flesh and blood to fashion men and women who dramatically love, hate, and fight. Beauty of words in the photoplay cannot take the place of pictured reality.

A stage play is more closely akin to a picture than a novel, but as we shall see, the play is now, and always will remain, a much more distant cousin of the photoplay than is commonly believed. The play, or drama, is a combination of words and movement spoken and acted by actors and actresses, who are before us in flesh and blood. This secures for the drama considerable psychological advantage.

But for twenty-odd centuries this advantage has been offset by disadvantages, the major of which is the matter of movement. Everything that happens must take place within three walls, and within the stage area of the theatre being used at the moment. For companies traveling between theatres this area may shrink one third, or be quadrupled. Before a new sequence may start in a new setting, action must halt, and the curtain drop. The audience then waits while the set is changed.

The methods of staging contemporary plays have been greatly facilitated by revolving stages, by modern lighting devices, and by more portable settings. But the stage, despite the modernity of its technique, must depend largely upon the unities of time, action, and place, laws concerning which are an inseparable part of its heritage from ancient Greece, from the schools of drama. The screen is almost wholly free from the various compulsions of these laws, and, because of this fact, has developed remarkable dramatic devices exclu-

sively its own and which can be used by no other art form.

The instantaneous flash back, the cut-away to other connected action, the quick return to the main scene have made possible the presentation of dramatic situations without pause, without awkward delay. This achievement has been one of the greatest contributions of the screen to the principles of the drama.

The talking picture has many of the assets of the stage and the novel, but it adds to them several distinct advantages of its own. Its fluidity, its ability to tell a story steadily and consecutively in human terms, with mounting force and with no break, gives it a power uniquely its own.

Note that the expression "human terms" is used. For lack of flesh and blood, the author has not used the term "flesh and blood." The direct stimulus which exists between actors on a stage and their audience is not possible for the screen, and undoubtedly this is the screen's one great disadvantage.

But, as the stage's possession of flesh and blood is offset by its lack of fluidity, so is the screen's disadvantage of "disembodied shadows" made relatively unimportant by its pace, by the great variety of emotional effects which can be secured by close-ups, flash backs, "montage" shots, "process" shots, and various other methods.

The screen is like the novel in that it has great breadth of vision. Where the novel describes a scene in words, the talking picture shows that scene visually. Charles Dickens accomplished one of his greatest feats

of writing when he described, in page after page of deathless prose, the flight of David Copperfield from his cruel stepfather to the haven of his aunt's arms in her little cottage on the Dover cliffs. But protagonists of the picture form will always consider even more emotionally effective the pictorial montage from the film *David Copperfield* which expresses Dickens' words in pictorial terms of a little boy lost in a busy city street, a little boy almost run down by a farm wagon, a little boy caught in a fearsome rainstorm. The rapid succession of these events was a pictorial achievement comparable with the written description.

To recapitulate, the screen is like the novel in that both have a canvas of unrestricted size. They can roam where and when they choose. But the screen's great advantage is that it can present persons and scenes visually; the novel can only describe them in words and illustrations. The talking picture has the vitality of verbal conversation which is lacking in the written dialogue of the book. A realization of the differences in form which exist between the various forms of writing and of the drama is the key to the matter of accurate photoplay appreciation.

Too many people criticize a motion picture without complete data. They may know the novel and the stage play, but far too many do not know the photoplay. They do not understand why and how it differs from the novel and the stage play. Therefore, to those familiar with the screen, the photoplay criticism of uninformed people seems absurd.

Frequently, such criticism is in the same category as

that of the engineer of a transpacific Diesel motor ship trying to tell Captain Musick of the transpacific airplane *China Clipper* that the manner in which he operated his compact, powerful internal combustion airplane motors was wrong. The engineer and the captain each depended for motive power upon a product of crude petroleum, but one common experience afforded no basis for sound criticism.

Without attempting to establish them as exact rules, four generalizations with respect to criticism are made.

The first two refer to the adaptation of the novel and of the drama to the motion picture form. The third indicates the necessity for adaptation. The fourth states the attempt which the motion picture industry is constantly making to improve its own standards and to achieve a greater emphasis upon good taste and good art than hitherto has been possible.

The first of the generalizations is this: novels, because their width of canvas is similar to that of motion pictures, require the least change to enter the motion picture form. The main changes from the novel are for condensation. For example, *Anthony Adverse* and *David Copperfield* have more material than could possibly be crowded into a two-hour picture. But frequently a novel is so near to the picture pattern that it requires few changes and it is lifted to the screen practically as it is. This was true of Pearl Buck's *The Good Earth.*

To have filmed *David Copperfield* exactly as Dickens wrote it would have required thirty-seven reels. Among the scenes of the book, there are many which, while

they are written beautifully, are insufficient in forward pictorial action to be effective on the screen. As examples, episodes of David at school and a number of scenes at Yarmouth concerned with David, Steerforth, and Little Em'ly were not included in the picture. In such instances, a shrewd screen writer preserves in his script a skeleton framework of the intent of the omitted scenes, and when one sees the picture he gets the illusion that he has seen everything he has read. A number of people have been asked, "What episodes of *David Copperfield* were left out of the screen version?" The stumbling answers proved the high efficiency which screen writing has attained in making deletions and condensations.

On the other hand, comparatively few changes had to be made in the screen version of *A Tale of Two Cities*. In this classic there are fewer central characters, and fewer dramatic situations than in *David Copperfield*. It is written with broad, bold strokes, rendering its translation into screen form a comparatively simple task.

Mutiny on the Bounty presented a problem because for picture purposes the story "breaks wide open" at its climactic point. Direct physical pictorial conflict is a requisite of the photoplay form. In *Mutiny on the Bounty*, Christian and Midshipman Byam are separated from Bligh at the time of the mutiny. Shortly afterward, Christian leaves Byam at Tahiti and sails on to remote Pitcairn Island.

To restore dramatic connection between the characters, the scenarists made their first major deviation from the story. To bring Bligh and the midshipman into

direct conflict and to keep them there until the time of the dramatic and historical court-martial, the scenarists had recourse to dramatic license. They inserted Byam into Bligh's amazing voyage to the island of Timor. The trip covered three thousand miles in an open boat. This kept dramatic cohesion between the two and gave cumulative point and force to the final trial in England. As there was no way to bring Christian into these relations, the picture, unlike the book, does not take us to Pitcairn. It relieves Christian of the dramatic burden, placing it upon the other two.

The author questioned five booklovers who had read the story and then seen the photoplay. He asked them to name the differences between the book and the screen play. All picked out one or two minor changes, but only one saw that portions of the second book of the Bounty trilogy, *Men against the Sea,* had been worked into the picture, and that Byam had been transposed into the open-boat voyage. But to photoplay experts these changes will always stand as conspicuous examples of how, when deftly done, alterations can add dramatic values to the new art form not possible to the old.

Our second generalization deals with the play. In most stage plays changes have to be made. These usually do not affect the central theme or the main dialogue, but they provide the necessary connection by means of which the screen avoids the scene-change interruptions of the stage.

One of the best ways to tell the difference between stage and screen technique is to see an early talking picture. In the first days of talkies, before this medium

had developed its own technique, stage plays were often photographed almost as they were written. Action which seemed striking on the stage was dull, too full of dialogue and too slow in forward movement on the screen. Today, in order to give the screen version the advantage of screen fluidity, stage plays are carefully altered before screen use. Students might well see the stage version and then the film version of *Night Must Fall*. Even the veriest tyro in dramatic analysis can see where the alterations necessary for screen form created a more powerful dramatic onrush than that possible for the original stage play.

For *The Barretts of Wimpole Street* the changes were by two stage craftsmen, Ernest Vajda and Donald Ogden Stewart, and a screen expert, Claudine West.

The final script, in an effort to make the story adequately pictorial and yet retain all the charm which made the stage play successful, deleted some dialogue and added new scenes. One scene, with its dramatically mounting camera shots, its swift flashes back and forth between the faces of Mr. Barrett and Elizabeth, serves as an illustration. This is the sequence in which Mr. Barrett exerts his will to make Elizabeth fail in her brave effort to climb a long flight of stairs. Delightful added love scenes in the greenhouse of a London park are brilliant with atmospheric color. To create greater suspense, the marriage which starts the fourth act of the stage play is held to the end of the screen version.

The plays of Shakespeare afford one great exception to this generalization concerning changes required to bring stage plays into the talking picture form. In the

spring and summer of 1936, the author made a speaking tour embracing forty-three American cities. The subject, "Better Motion Pictures," was discussed before educational and club leaders. This tour was ended with a lecture before the Secondary Division of the National Education Association Convention at Portland, Oregon. In these talks much interest was aroused by the statement that William Shakespeare was "a natural born scenario writer." It was pointed out that practically no changes had to be made in the Quarto of *Romeo and Juliet.*

Professor William Strunk, Jr. of Cornell University, literary advisor for the photoplay, is authority for the assertion that the film version of *Romeo and Juliet* provides practically the first chance for this play to be heard and seen almost exactly as Shakespeare wrote it. It is a fact that far more changes were required for the various stage versions, particularly the Cibber version, than for the photoplay.

Shakespeare began his career under crude stage conventions. He played in inn yards and in comparatively unequipped theatres like the Swan and the Globe. He had little constructed scenery. We know how humorously he satirized the stage delinquencies of the time in his play within a play in *A Midsummer Night's Dream.* He did not confine himself to the traditional three or four acts of the classical drama. He made many scenes. He changed his locale swiftly whenever it advanced his dramatic purposes, and, because of this, many of his plays have the fast pace, the fluidity, of a modern motion picture.

This fluidity was reduced when the theatres of Shakespeare's time were replaced by modern buildings with set footlights, curtains, drops, all the familiar impedimenta of the current stage. And David Garrick, Sir Henry Irving, Sir Herbert Beerbohm Tree, Edwin Booth, Sothern, Marlowe, Lawrence Barrett, and Katharine Cornell have found it necessary to alter Shakespeare's original text to fit the physical limitations of the stage of their times.

Critics of the motion picture, whose study of the medium has been insufficient, frequently confuse their readers. They dwell at length on a change in dialogue, often not important to the meaning, and miss the significance of a plot change necessary for the film medium. Frequently, critics do grave injustice to a fine piece of transitional writing when they say, "It is very like the play," overlooking subtle changes which had a large part in the creation of a successful photoplay version. Too many appropriate changes are not given the recognition they deserve.

With this in mind a third generalization is submitted. No story reaches the screen without changes. Even if the dialogue remains the same and the essential dramatic sequences are unchanged, there still remain important physical changes which mark a definite dividing line between the appeal of the story in pictures and in its original form. Of this, *Grand Hotel* and *Romeo and Juliet* are good examples.

Not many changes from the stage form were required for *Grand Hotel.* It is one of the few modern plays that was almost perfect screen material. It is an

exception proving our second generalization. But critics were unanimous in calling the screen version far superior to the stage version.

Why? Because in this story the huge bulking luxurious hotel was the star. The people in it were secondary. Vicki Baum established the theme that anything and everything dramatic in the world can happen in a great hotel. The physical bulk of the hotel was a vital factor.

This could only be suggested on the stage, but it was actually achieved on the screen. Do you recall that amazing shot looking down inside the hotel from the top floor, past seemingly endless balconies, to the clerk's desk two hundred feet below? To competent critics these physical changes of the screen play made it superior to the stage version.

In the same manner, the author sincerely believes that the screen version of *Romeo and Juliet* for the first time in dramatic history achieved that for which William Shakespeare longed when he wrote the play.

Romeo and Juliet is painted on too broad a canvas for efficient stage use. The play starts with a quarrel between the retainers of the Montagues and the Capulets. However effectively suggested on the stage, this illusion remains difficult to set up with a few supernumeraries and a small setting. On the screen the Plaza at Verona could be reproduced in full size, and the fight in the photoplay is comparable to many struggles which actually took place on it during feudal times.

The balcony scene presents considerable difficulty for the stage. Its height can only awkwardly be sug-

gested. The garden, or "orchard," can only appear in small part. The visual reality of the screen adds dramatic values to stories, values which are exclusively their own and which are not possible to either the novel or the stage play.

When searching for reasons why the studios change stories, another important element enters. It should be kept in mind that the screen has voluntarily bound itself to certain rules of good taste and good form. It is the only art which has bound itself to complete internal self-regulation of moral and aesthetic factors. The industry film review mechanism under the direction of Joseph Breen affords a means for this. Situations and scenes which do not come within these rules, called the "Code," are automatically rejected.

Among other things, the Code bans the use of profanity, demands respect for the clergy, and eliminates allusions which are considered objectionable in common conversation. In other words the Code is a canon of good taste which is applied to a picture while it is being written. Under this practice no scenario can go to a stage for production without meeting set regulations. Films are sometimes criticized on moral grounds. Undoubtedly, commercial film producers, faced with a public taste which is not always on the highest levels, encounter problems in maintaining high standards in their stories, and at the same time in pleasing the public who pay to see screen attractions.

Now we offer the fourth generalization. No other art has so thoroughly cleaned its own house. No other art has offered so many great and beautiful achieve-

Globes for illumination of motion picture sets

Motion picture camera lenses

Storehouse for old motion picture scenarios
Where scenarios start—studio mimeograph room

ments in proportion to the few years of its life. No art of the present day, except the motion picture, makes any concerted, unified effort to keep its standards high, to educate the public to follow it upward as it raises these standards.

7

THE SCENARIO WRITER

SCENARIO WRITING is a characteristic and unique development of the motion picture industry. It is one art which is almost totally governed by its immediate environment. It has a few basic rules of its own, but a competent scenario writer is usually one who has long been in his studio, long affiliated with one, two, three, or four directors or stars. He translates a story into terms of human and physical materials as they obtain in his own plant.

For example, a scenario writer preparing a photoplay which he knew was to be photographed by Karl Freund would be likely to write differently if the assigned cameraman were less expert in effect and "trick" photography. Freund (*Parnell* is a picture from his camera) is an acknowledged expert in getting extra dramatic emphasis by the use of out-of-the-ordinary photographic angles and compositions and with unusual lighting effects.

If the picture were an outdoor epic and the cinematographer Clyde de Vinna, the scenario writer would again have a special writing guide post, for De Vinna can, above all others, make a Hawaiian sunset a poem in photography. The scenario writer must also shift and change his technique for the director who will

handle his script. Different writing is required for the hammering, dynamic Van Dyke of *After the Thin Man;* for the suave, quiet, sculptorlike Sidney Franklin of *The Good Earth;* and for Mervyn LeRoy, an expert in melodramatic qualities.

It is certain that Anita Loos, in collaboration with Robert Hopkins, would have attempted neither the original of *San Francisco* nor the scenario had she not known in advance that her studio had under contract an amazing technician capable of reproducing the San Francisco earthquake.

The scenario is so related to the physical facilities of the studio concerned that new writers are rarely, if ever, asked to write the final scenario. The ability to write a final script presupposes at least three or four years of actual studio experience.

Screen writing is a threefold structure. The first and last parts of this structure are known; the first is the basic story or play; the last is the completed scenario. Between these two is perhaps the most important work, and yet one rarely sees it mentioned in discussions concerning the art of writing for the screen. This step is "the treatment."

Here the magazine writer or playwright receives his first initiation into the differences between his art and the newer art of screen authorship. Frequently, the treatment is also written by the scenario writer who makes the final script. But often a writer who has been a successful novelist or a playwright is contracted by a studio to prepare a screen treatment of his material. Norman Reilly Raines did this with his "Tugboat

Annie" stories which appeared in *The Saturday Evening Post.*

When a writer begins a treatment, he reads the original story many times. He then writes in sequence the action of each succeeding scene as he visualizes its appearance on the screen. He does it by paragraphs which, to make changes easier, are not given arbitrary scene number as designation. He merely makes a preliminary chart of the action in simplest possible terms.

If this treatment has dialogue it is only in brief sketch, for treatments are not supposed to be fine, finished literature. They are usually rather bald and direct. Their sole purpose is to set up a framework for the story so that those who work with it may see if there is a possibility of a final plot which will move rapidly and logically, and which will be pictorially interesting.

This treatment is first discussed with the associate producer and the director, and, frequently, with one or more other writers. Its weak structural points are recognized and corrected.

Later, a second treatment is made with more character detail and more dialogue. Special experts in the writing of dialogue frequently begin work here. From them the treatment goes into the hands of the scenario writer. This technical expert takes the running series of sequential paragraphs and fits them into scenes, indicates the dramatic possibilities for close-ups, medium close-ups, long-shots, and effect-shots.

At the studios her associates tease Anita Loos by saying that she wrote the most expensive single sentence

in entertainment history. At the right point in the scenario of *San Francisco* she blithely wrote: [1]

Mary (softly)

Yes, Jack.

Burley, putting his arm about her, leads her down a short flight of steps toward door leading into ballroom, CAMERA TRUCKING WITH THEM, when o. s. [off stage] a strange, low, protracted rumble. They stop. The rumble increases.

CUT TO:

That paragraph and those descriptive of the earthquake which followed brought six months of headaches to score of technicians, stars, directors, sound men, set-builders, effect makers, and cameramen.

The scenarist must use the specialized knowledge of his own studio resources as an organist uses the many keys on his console. He cannot proceed adequately without this special knowledge, and this takes years to acquire. While academic courses in actual scenario writing are interesting, they cannot be of such direct value to one ambitious to write scenarios as the late Dr. George Pierce Baker's Yale workshop course was to embryonic stage playwrights. Whatever academic background might be secured would have to be altered to fit the actual facilities at the studio in which the writer might find employment.

The scenario writer usually knows the stars for whom

[1] Screen play by Anita Loos and Robert Hopkins. Owned by Metro-Goldwyn-Mayer Studios.

he writes dialogue, and this makes possible a closely personal quality in his work. He is familiar with the technique of his director, and he knows the possibilities of the various departments of his studio. He must know also localisms and idioms of particular communities, so that when a film is made of a particular locality he can be exact in his usage of words. He must be able to see a symphonic connection between the various agencies which constitute the studio.

It is from the writing of treatments that many standard novelists and playwrights go into actual scenario writing. Donald Ogden Stewart, Anita Loos, Hugh Walpole, Morris Ryskind, and Alice Duer Miller have wholly or partially abandoned the novel and the play for the scenario. Other authors do not like scenario writing. They prefer to write stories.

And there are still others, once only scenario writers, who have developed so great a flare for original creation that original stories by them are in constant and high-priced demand. An example is Frances Marion. Miss Marion's first director-boss, Hobart Bosworth, who paid her $25.00 a week, is the character-actor star of the present day.

As a stenographer on the set with a director in the early days, Miss Marion showed a mind so attuned to photoplay needs that she was promoted to writing scenarios. She then tentatively submitted a few of her original stories. Overnight she became the most consistently successful and the highest paid author in pictures. She made treatments and scenarios of *Stella Dallas, Humoresque,* and *Min and Bill,* and she reached

the heights with such originals as *Emma* and *The Big House.*

Grover Jones is another successful combination scenarist and original author.

Related to the stage, and yet quite a special part of the film set-up, are the so-called comedy "gag men." These men are usually trained and successful authors of stories or plays, but they have minds particularly attuned to the comic.

Comedy scenes are very much a matter of timing and humor values. Comedy stories are usually assembled as a rough skeleton; no attempt is made to get more than basic humor into the original continuity. When the scene actually starts on the set, one or more "gag men" sit with the directors and the Marx Brothers, the Ritz Brothers, Herman Bing, Hugh Herbert, Harold Lloyd, Joe Brown, or any other of the accepted comedians of the time. With properties and settings before the group, the gag men begin to suggest the throwing of this, the moving of that, a seemingly unpremeditated fall, a substitute or funnier line of dialogue.

Gag men are strange individuals who prefer to be called "comedy constructionists." It has been said that writers are seldom born, but are almost always made from sheer hard work. But surely gag men are born. The extreme sensitivity of the late Al Boasberg to comedy seemed innate. It is a quality seldom acquired. Certainly no school in the world could teach a person to be a "comedy constructionist."

Screen comedies are so dependent on separate funny sequences joined together to make a coherent whole,

that preparation for a comic picture has one important deviation from the technique used to build a dramatic photoplay. In drama, romance, and tragedy a writer can accurately judge in advance how the public will react emotionally, but laughs are a more difficult problem. They come, or they fail to come, on the presence of, or lack of, an accent of the voice, a split second in timing an action.

For this reason the most successful screen comedians test the reactions to the "gags" they propose to use later in a picture before actual audiences. They fit these gags into a stage show and travel with it to several cities. Their "gag men" accompany the show and stand in the wing with hand adding machines to "clock" the number of laughs. By the audiences' laugh reactions they lengthen or condense a gag, or discard it entirely. The Marx Brothers have used this device successfully for several years, and Eddie Cantor's coming films will be preceded by similar "in the flesh" tours.

If the reader has attended classes in any one of the thousands of high schools regularly using the "appreciation manuals" prepared for the best pictures by representatives of the National Council of Teachers of English or the National Education Association, he knows that dialogue on the screen can only be about half as long as that on the stage before being broken by action or by shifting of close-ups. He is able when attending a motion picture to sort the good touches from the mediocre, and to form in his own mind treatments for pictorial reproduction of stories he has read or plays he has seen. He will know that action upon

the stage and action reflected upon the screen require different timing.

But he who really wants to contribute eventually to the screen must love it for itself. The screen has suffered and its growth has been checked at times because of the necessity of eliminating those who are not sincere in their affection for it. It was inevitable that in a new art which suddenly began to shower considerable financial rewards, many should have been attracted who were interested only in the rewards.

A number of playwrights, novelists, and technicians came to the studios interested in the money offered, but not really in the medium itself. They wrote for the screen, but they did not give themselves to it, and they reserved their best thoughts for the art in which they had started. As a result they contributed nothing lasting to the photoplay and, eventually, they were eliminated.

Today, although the screen is less than fifty years old, it has practically completed the process of purging itself of those insincere persons who saw in it only a quick way to easily gained money. Today the people who are succeeding in the studios are the young actors who see in the screen a chance to carry the acting art to millions, who fifty years ago never saw a Maude Adams or a Henry Irving.

Today writers of great novels and great stage plays are finding a new thrill in producing original photoplays, written directly to fit the requirements of the new art. Today young scientific students read avidly of the remarkable scientific advances—chemical, elec-

trical, photographic, and acoustical—which have been made in the film industry, and which will continue to be made by it for years to come.

Today the person really sincere in his ambition to be a part of the screen's future knows that exceptional financial rewards go to only a few, for special and unique reasons; that for the majority there is only a compensation reasonable to the profession involved. Those who are entering the pictures are concerned more with the satisfaction of achievement in a great new field than with its financial compensation. In other words an unhealthy mental approach to the screen has been replaced by one which is healthy and normal.

The screen's great future is unquestioned. That it could in fifty years have risen from custard-pie comedy to *The Good Earth*, *Lives of a Bengal Lancer*, *Romeo and Juliet*, *Story of Louis Pasteur*, *Anthony Adverse*, or *David Copperfield* makes the possibilities of its progress within the next century almost illimitable.

Those who wish to embrace the screen as a career must do it wholeheartedly, not in the spirit of one young college graduate who had a fine reputation as an amateur actor. He wanted work in motion pictures. He was a good type and, even though young, an excellent technician. But in his conversations he remained aloof, even sullen.

Finally the reason was discovered. He admitted that he despised the screen. He was seeking work as a screen actor only in order to make enough funds to take him to New York, where he proposed to seek work on the stage.

Similar tales can be told of authors who wonder why the motion picture producers never buy their stories. After making such a complaint, one confessed that he had seen only one motion picture in ten years.

The screen of the future will offer many rewards, but these will only be for those whose devotion is steadfast. And the scenario writer will share strongly in any future advance of the medium, for, more than any other technician, he is definitely of the screen and unique to it.

From the criticisms of associate producer, star, and director the scenario goes to the stenographic department. About fifty copies are made. These are sent to the heads and subheads of twenty-six different departments: research, art direction, interior decoration, camera, laboratory, sound recording, music, carpenter construction, location, make-up, "trick" effects, dance direction, hairdressing, transportation, casting, properties, and many others. Each department translates the scenario into its own terms.

Picture making is divided into three distinct periods: preparation, production, and completion. During the time of preparation, the average for which is three sixths or one half of the total time, the story is purchased and adapted, and we have seen these processes. We shall now examine the building of sets, the making of costumes, the hiring of players. Careful preparation can save a great deal of money during the expensive period of photography.

The period of actual photography requires only one sixth of the total. The period of assembling, editing the individual photographed strips of films into a cohesive,

smooth film story, and the manufacturing of hundreds of duplicate release prints for exhibition in the theatres, requires one third, or two sixths, of the total time.

In other words, if the total time of a picture in process were six months, three months would be devoted to preparation, one to production, and two to completion. Pictures vary in the total time they take, from six months to three years, depending on research and physical factors.

The first work to begin is that of research, for upon it rests the success of a film. On a picture requiring a great deal of necessary authenticity, such as *David Copperfield* or *Parnell*, research may start two or three years before the filming begins. Research must be completed or at least outlined before a set, or a costume, or a property is made. The eyes of the picture going public are well-trained. Anachronisms are immediately noted, and they bring letters to the producer of the offending picture. Before the physical preparation for the picture begins, such wrinkles are carefully ironed out.

8

MOTION PICTURE RESEARCH

When one recreates past or present life on the screen, it is necessary that he have reasonably logical backgrounds against which characters may play. *Anthony Adverse* required a partial reproduction of life in Italy during the romantic days when Bonnyfeather was a great trading house. *The Garden of Allah* needed the Sahara oasis of Sidi-Zerzour, with a house of proper period and Arabian architecture.

For *The Good Earth* whole villages were photographed in China. Then, for use in close-ups in Hollywood, houses were taken apart, their pieces numbered, and sent to America. There they were set up before the cameras. Portions of the 1893 World's Fair were recreated for *The Great Ziegfeld*. More than six thousand illustrations covering manners and customs of the Dickensian period were assembled before a single setting was built for *David Copperfield*.

The following questions are a few which reflect the extent and character of research:

1. Who invented the Chinese ricksha?
2. In what year did ice cream make its first appearance?
3. Were mustaches usual for British gentlemen at the time of the French Revolution?

4. What was a "Jimmy Skinner"?
5. In what year was gold discovered in California?
6. Were cats used during the World War to warn soldiers and sailors of poison gas?
7. In the days of Mary, Queen of Scots, did mounted Scottish clansmen wear kilts?
8. Did the first French colonial governor of New Orleans wear a mustache?
9. When did sailors of the British navy first use the hand salute?
10. Did women or men first wear gloves?
11. What was a "yellow dog"?
12. What sauce did Giovanni Galeazzo Visconti serve with chicken in 1378?

The above questions might very easily be part of the familiar "Questions and Answers" parlor game. But they were amusing to the expert research technicians who answered them. To these men and women such questions represent a routine. If answered correctly, the public blandly accepts the word of the research expert without credit or praise. Let such questions be answered incorrectly, however, and whatever serious dramatic intent the picture may have had is lost sight of in public clamor over obvious, careless, and unnecessary inaccuracies.

The public demands that its pictures portray authentic customs and manners, but when a picture is correct in this regard, it seldom bothers to inquire how this result was achieved. But it is quick enough to blame if the

hapless motion picture producer is caught in an obvious error of detail.

It has been established that the background of a photoplay must support and advance the action of the foreground, but that it must never be obtrusive.

Any error in detail easily recognized by a theatregoer would destroy the seemingly effortless building toward a climax, which is particularly essential in a photoplay. To prevent breaks in the concentration of audience members, more than a quarter million questions on customs and manners are answered each year by studio research departments. A screen writer must be sure for example that if he uses the slang expression "chappie," this term was really in use at the time of his story.

The art director goes to the research department with questions concerning period architecture, furniture, and properties. The property man asks for books that will tell him how to run an ancient Chinese ox-power gristmill. From every technician in the studio come questions that concern his especial art or vocation.

The uninitiated are apt to consider a studio research department as a sort of specialized library. It is true that such a department may have ten thousand or more books of its own, including encyclopedias, almanacs, trade directories, naval and military regulations of various countries, and all other traditional tools of the research worker.

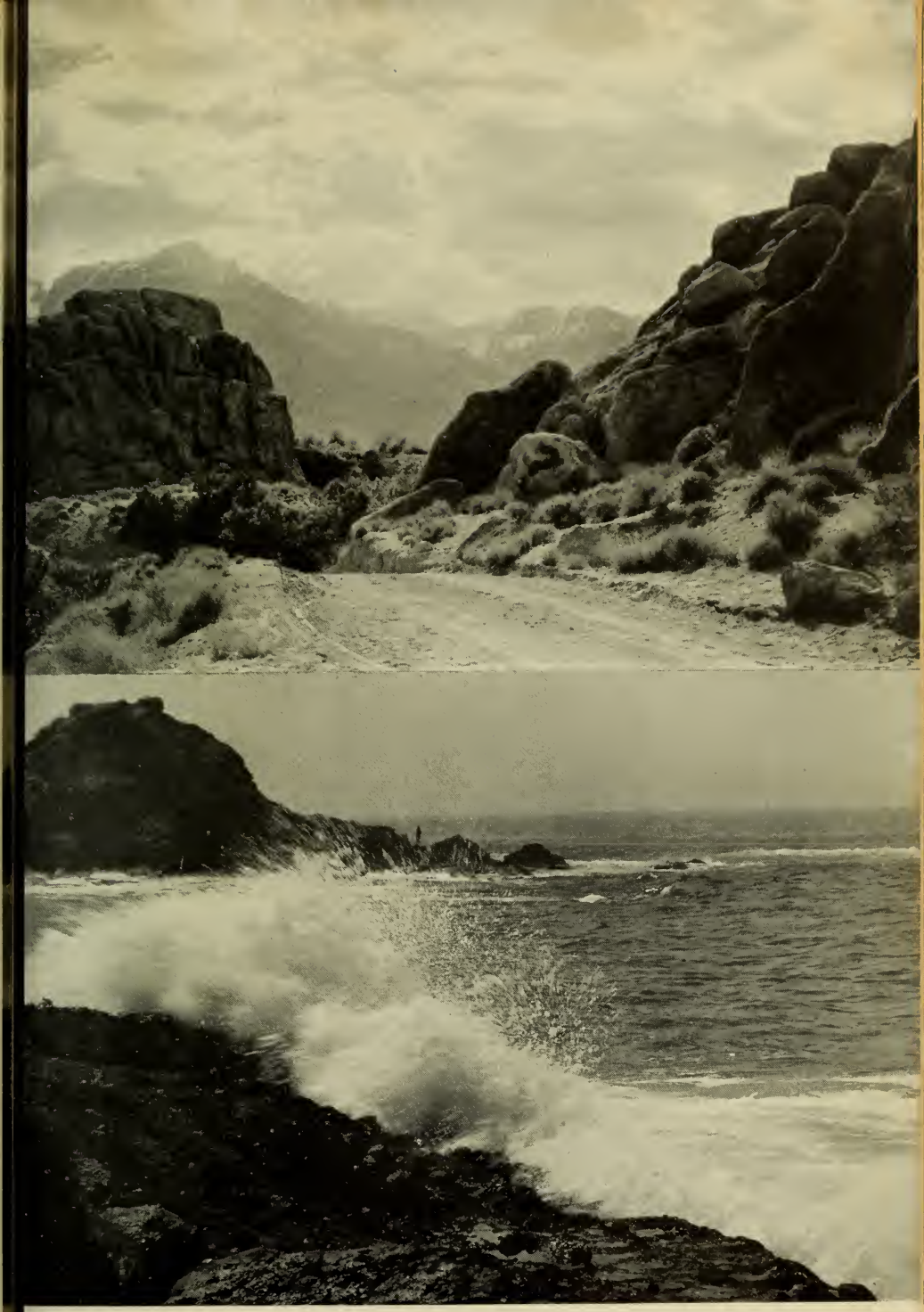
But these books are far less important than the contents of huge files. One portion of these files contains data from which all kinds of information can be ob-

tained. One file may tell what man or organization has the finest existing library on Tibet. In another, one finds the name and address of a man who is an expert on the habits of the llama, a South American beast of burden.

Another section contains thousands upon thousands of clipped pictures, carefully indexed and cross-indexed by subject. If a director wishes to see a fire engine of the 1905 period, he will find under that classification a half dozen illustrations of such equipment. Since the film is a pictorial art, these picture files are vitally important. Every research head guards them and looks forward to some unexpected discovery which will enrich the collection.

During a London rainstorm one research director had stopped for shelter near a secondhand store. She noted copies of *Punch* hidden under stacks of old newspapers. She moved the pile slightly and found complete sets of the magazine for years, beginning with 1841. For research connected with such pictures as *The Barretts of Wimpole Street* and *David Copperfield* the value of the find could not be estimated in money.

So thorough is modern motion picture research that the percentage of errors which reach a finished picture is infinitesimal. It should be emphasized that the perfection to which motion picture research has been carried must be considered in any discussion concerning the appreciation of a good motion picture. Few other arts have brought research to a point so fine, for no other art has had focused upon its works the eyes of so many millions of people.



Alabama Hills, California, used for mountain passes and other rugged vistas

Seacoast used for French, Scotch, and New England marine locales

Plaster expert completes a column for the set of a talking picture

Silversmith at work in a motion picture studio

One might conceivably get by with an error in the novel *Gone with the Wind*, reaching one million five hundred thousand readers—but who would dare to present the smallest inaccuracy before the audience of one hundred million the picture will have in its *first weeks* in film form.

When theatregoers gleefully rush into print with a cinematic error, they are more often wrong than right! No less than a dozen persons wrote the studio about a "letter box" on the gate of the cottage at Blunderstone in *David Copperfield*. They pointed out that letter boxes did not exist at the time. But they only *thought* the object was a letter box. It was really an old-fashioned candle lantern, quite true to the period.

Letters were received from Britishers saying that they had never seen a telephone like that used in *What Every Woman Knows*. The telephone had been bought in England and imported from there.

The research department keeps itself informed of the foreign and historical material in the studio's own film library which will be discussed at length later. In one large studio it includes sixty million feet of film and covers almost every important world event since 1906.

Important, too, is the ability of a research director to find quickly men and women who are experts in some special phase of human experience.

A Chinese general is available for Oriental lore.

A quiet-mannered Austrian nobleman is called in for conference for pictures concerned with Middle Europe during the past thirty years. When he was a boy, he was a page in the court of Emperor Francis Joseph.

A doctor listed in medical journals as one of America's six best mental specialists is at hand when scenes involving mental instability are filmed.

Navy and army officers of twenty different countries can be reached by telephone and brought to any studio within an hour.

A woman who has made herself an expert on the table service etiquette of a dozen nations is a joint employee of a research and an interior decoration department.

If a dramatic crime is committed in a specified city, fictitious street names are obviously used to avoid complaints. But if a section of a city is used in a highly complimentary sense, the studio will receive complaints if the real names of the streets are *not* used! This actually happened in a large southern city. Its aristocratic residential district with its fine old homes was photographed in some detail. The common protective custom of using fictitious street names was employed, and complaints poured in by the score.

Copies of telephone books from every great city in the world are an integral part of a well-regulated research department. Trouble arises if real telephone numbers are employed in a crime scene, so false numbers are used.

One amusing exception to this concerned a New York telephone number used by a young gallant in calling a very pretty girl. Over a hundred curious New Yorkers dialed this number and were answered by a sweet voice which said, "This is Loew's Ziegfeld Theatre, and this week we are playing Ronald Colman in

Clive of India." The theatre belonged to the film company concerned and the number could be used.

In one recent picture the Lamda Chi fraternity was mentioned. Since this is the name of a fraternity, Kappa Chi was devised.

In the same college film, the locale was obviously a college in California. The names of the professors and the students at all California colleges were checked so that each name used in the picture would be fictitious. A Miss Fiske, for example, became a Miss Luke. Miss Luke is a studio secretary who signed a waiver giving the film concern the full right to use her name. Precautions of this sort are obviously necessary.

Research for great costume pictures often becomes a matter of careful selection from a great bulk of material. Before costumes and sets were prepared for *David Copperfield*, photostatic copies were made of six thousand different illustrations of the period. Preliminary to the making of *Romeo and Juliet*, a research expert brought back from Europe nearly ten thousand photographs of paintings, frescoes, and building details. For one story of slave-trade days, more than three hundred reference books were read.

These facts are so plain that it is not necessary to emphasize further how important it is to understand the science of film research. Understanding its function is a prelude to the correct appreciation of a fine modern photoplay. It provides employment to many people. Scholarship is not, as some would believe, limited to professions with established traditions. The details which the research department supply are the results of

10. Did women or men first wear gloves. *Ans.* Men, 2400 years ago; women not until 1300 A.D.

11. What was a "yellow dog"? *Ans.* A slang term used for a gold coin about 1870.

12. What sauce did Giovanni Galeazzo Visconti serve with chicken in 1378? *Ans.* This fourteenth-century gourmet had his chicken served with a sauce made of violets. The account of the Gargantuan banquet offered by Visconti to his friends provided authentic details, even recipes, which guided reproduction of the banquet of the Capulets in *Romeo and Juliet.*

The answers to these questions reflect a great deal of hard, concentrated mental work. Without a capable and specially trained research department, no sound attempt at the authentic reproduction of manners, customs, and actual environment of other periods could be achieved by any film studio. It is impossible to overestimate the importance to modern motion picture making of correct and accurate research. It is one of the most vital activities in a studio.

Scholarly and exact research into manners and customs of all periods, races, and geographical locations is an integral part of modern motion picture making. The "dear old days" of the film, say of 1908, when nobody bothered much because a girl of the Civil War period wore a blouse, era of 1900, are gone forever. With the growth of the picture audience millions of critical eyes were focused on every detail.

For this reason every modern studio has its own large research department, headed by a well-paid, highly com-

petent technician, specially trained for the service. Questions with respect to various details constantly arise and they must be correctly answered. These questions, of which the above are but few, were answered by departments especially established for the purpose.

9

THE SETS ARE MADE

IT IS CUSTOMARY in preparing for picture production, to start first those operations which require the most time for completion. Settings lead this list, and wardrobe follows. Decisions as to sets are made at a conference of operative technicians. This conference carries forward the intent of an earlier conference of associate producers in which it was decided to buy a particular story.

The new conference includes the associate producer, the studio production manager, the director of the story, the assistant director, the research director, the art director (or chief studio architect), the cameraman, the transportation director (automobile and railroad arrangements), the location man (who finds and chooses authentic outdoor "locations"), the casting director (acting talent), the costume designer, the construction superintendent, the electrical superintendent, the chief painter, the "trick shot" expert, the cost accountant, and the chief recording engineer. Thirty years ago a staff this large was unheard of. Thirty years from now it may be double its present size.

If additional technical advice is needed, a special technical director is added as indicated under Research. *The Ghost Ship* is an example. A sea captain, trained

upon a sailing ship, was an important figure in the initial production conference.

The detailed work of each of the men mentioned will be discussed later. Since all of them have individual interest and problems dealing with the settings to be built, they all attend the initial conferences. Each must know what the other is doing, and all must maintain the spirit of working together. In an enterprise so mosaic in character as the making of motion pictures, the failure of any one activity to correlate, interrelate, and co-operate might easily mean failure on the part of the whole picture to achieve its dramatic goal.

Specific problems must be solved. Among them are the number of lights the electrical superintendent will have to supply on a given day; the number of people to be fed and the number of meals to be served on location; the number of cameras; the kinds of lenses the cinematographer will need for a certain effect on a certain day; the number of gallons of paint the chief painter will require. When such questions have been solved, the cost accountant sharpens his pencils, and the art director-in-chief appoints a company or a "unit" art director as assistant.

The cost accountant puts everything down in cold figures. Through long experience he has developed many short cuts. By averaging the costs of many sets he can estimate any one set at a certain figure per square foot and come very close to the actual cost. In the same manner, for crowd scenes it is known how many players are needed to give a crowded appearance to a specified area of square feet.

The cost accountant brings these figures to a second conference. There, if the budget is too high, each department head computes methods of economy. The final budget is established on a basis of a certain number of working days. To complete the picture within a prescribed time becomes the objective of all concerned. Film cost accounting has reached such a point that despite the many chances of disturbance in a business so dependent on human health and weather factors, a good 80 per cent of all pictures reach completion within the time set, and within the original budget cost.

The mention of the cost accountant brings into focus a general department of the studio which spreads its activities so widely over every phase of production that it may be overlooked as a factor in production. But the accounting department pays all the bills and computes all the costs. Picture making is not like the manufacture of gloves, or of overcoats, or of shoes; it is not based on a few raw materials and specific labor activities. Picture making is a business in which the rules change every day. To prevent loss or waste, accounting and auditing practices must be much more precise, exact, and detailed than those which prevail in most other industries.

The financing of day-by-day production in itself is quite distinctive. Modern studios are not concerned directly with the sale of the pictures they make. They turn out a finished photodramatic product and that ends their immediate responsibility. No studio attempts to dictate selling policies. It furnishes its photoplays to a subsidiary corporation of sales experts. The studio's

problem is to furnish a specified number of pictures a year. During the depression, studio officials were often asked, "How many people did you lay off?" During the depression studio employees suffered less perhaps than those of any other manufacturing plants, for they had to provide the same number of finished films as they had done formerly. The only difference was that they had less money returning from the distribution department with which to make these pictures.

In normal studio accounting practice, studios draw on their sales subsidiary the first of each week for the money required for that week's operations. The business side of a motion picture studio is a study in itself, and it is developing rules and opportunities of its own.

After the settlement of budget issues, the unit art director begins his work. A unit art director is a combination of artist, architect, and interior decorator. Invariably he is a specialist. He usually knows one branch of architecture and decoration better than any other available person. Pictures such as *Café Metropole* and *Grand Hotel*, both continental in tone, had as unit art directors technicians of foreign birth. Such men would scarcely be assigned to *A Star Is Born*. A "marine architect" is necessary for the filming of such pictures as *The Captain Hates the Sea* and *Captains Courageous*.

The work of the research department has been described. If the picture is one entailing extensive architectural research, such as *A Midsummer Night's Dream*, the unit art director will be appointed months earlier than he would be for a modern story.

After proper and thorough research the unit art

director customarily makes rough sketches of all sets considered. For a picture with twenty sets he might make rough sketches of them four or five different ways. If the picture is particularly colorful and important, like *Lloyds of London,* he will supplement these pencil drawings by having an artist prepare his better concepts in water colors.

To settle basic technical problems, these preliminary designs are then studied with the director, cameraman, and sound engineer. Doors and windows and stairs must be in the right places for the dramatic action required. Adequate recording of sound must be possible. Once again emphasis is placed upon the co-operative relation of the various departments.

When approved, a regular architect's blueprint is made from the sketches. But these plans are not yet final. They are put in the hands of a man who, with light veneer wood, makes miniature sets to exact scale size. This part of the picture making process would be a joy to children, for the miniature sets would be ideal for "playing house." No toys ever produced by the best craftsmen of Germany are better made than those prepared for this professional purpose.

But these devices are not playthings nor are they juvenile. Directors, cameramen, sound men, electricians, property men, assistant directors, and casting directors pore over them. They regard these "toys" with intense seriousness, for they are the means of saving thousands of dollars each year. With small models like these the average director, sometimes using wooden figurines made to scale, works out the detail of his action and

decides on his entrances and his exits. The cameraman plans where to plant his cameras and which lenses to use. The electrician computes finally the number and kinds of lights he will need for correct illumination.

In working with this tiny model, hidden story mistakes, mistakes of movement, and other overlooked technical errors are discovered and corrected before they can cause costly delays. The assistant director, responsible for "background action" in big crowd scenes, can figure the movements of groups of people so that the human background behind the principals will always be plausible and logical.

When each model has passed this sort of "third degree," the head draughtsman of the art department assigns men to draw completed plans for each set and for the detail sketches. These architect's plans are much the same as those prepared for a house, except that they are more detailed. They bring in a new element. They are all figured with an eye to the single lens of the camera.

Attached to the plan will be from five to twelve detailed sheets of drawings. These will include details of cornices, special hardwood, doorknobs, call bells, office furniture, ship's fittings, or whatever may be necessary. The plans are prepared by excellent architects, for the increasingly vigilant observation of the theatregoer demands exact detail. Nothing short of perfection ever passes without a challenge from some among the 11,425,000 persons who attend picture performances each day in the United States.[1]

[1] Figures supplied by the Association of Motion Picture Producers.

Scores of blueprints are made and furnished to all the departments which assist with the building, decorating, or photographing of the set. At the same time the art director makes stage space reservations for this and all the other sets being made for a specific picture. In any major studio it is necessary to reserve space for settings on stages weeks and weeks in advance, just as it is necessary to reserve seats early for a popular stage attraction.

In a single large room at one studio there is an immense chart, holding large floor-size plans of the various stages. Art directors cut out proportionate forms in paper of the sets they are to build and place them on the master chart of the stage on which they plan to work, fitting them in to utilize every possible inch of space. It is customary also to group the sets for a given production as closely as possible on adjoining stages.

By this time plans have been delivered to plumbers and painters and carpenters, most of whom never see any one of the stars for whom they prepare hundreds of sets. The "industrial section" of a great studio works twenty-four hours a day. The actual physical building of a set as large as Fotheringhay Castle in *Mary of Scotland* may take weeks.

It is in set construction that the greatest number of the 276 professions and vocations, concerned in the making of a picture, find their outlet.

Diesel engineers will place a huge engine in the set representing the engine room of a great steamship. Genuine Gloucester fishermen will install bait-cutting tables, the counterpart of those actually used on the

fishing schooners which operate dangerously on the Grand Banks, in the path of onrushing passenger liners.

Chinese cooks will install their native stoves. Ice-making engineers will place equipment to freeze the surface of immense skating rinks.

The activities of a unit art director, and of the individual artisans who aid him, are limited only by the imaginations of the authors who wrote the stories which are being translated into picture form.

For the earthquake in *San Francisco* the sets had first to be designed. Then engineers—experts in stresses and strains—were asked for their contributions. It was carefully figured whether a pushing, pulling, or lifting strain had to be applied to make the wall or floor of a building buckle or break in an authentic "earthquake" manner. When these places of break were determined, material resembling mortar, but not cohesive, was placed between the bricks, so that when strain was applied the wall would give way. Hydraulic lifts or ropes attached to powerful pulleys or other forms of leverage were placed, out of view of the camera, to provide that strain.

This presented unusual problems, but even the smallest set requires the close, expert attention of many different trained hands. The making of sets is a complicated, fascinating enterprise.

Every day of the year the "set board" in the construction department of a big studio offers a challenge to the imagination.

A typical recent list of such settings included: "Interior of Captain Disko's cabin, schooner *We're Here*," "Exterior of slave trader's compound," "Outer office of

Excelsior Oil Company," "Central Horse Barn at Brookdale Breeding Farms," "Operating room of General Hospital," and many others.

Sets are of no value if they are so conspicuous that they attract more attention than dialogue or action. But without correct sets, the action of the play loses dramatic force.

Upholsterers preparing furniture for a talking picture

Studio plaster artist at work

Property man checking inventory of his supply box

10

PROPERTIES

Of the many trade terms used within the motion picture industry, the majority are original. Three, however, "spotlights," "grip," and "properties," are an inheritance from the stage.

Properties are any physically movable articles used to provide atmospheric background for stage or screen plays, or which are handled by players during the physical action of such a play. The term was first used in a theatrical meaning in the fifteenth century. That meaning, for the stage play, has not changed since that time, and the word has been incorporated into the newer language of screen production.

The stage has been responsible for many words which have enriched and expanded our language. Then along comes a new art, the motion picture, distantly related to the screen, but still differing from it in many ways. It was inevitable that it, too, should begin to evolve a language of its own, a language which includes such specialized terms as "close-ups," "fade-out," and "cut back." It was inevitable that the motion picture should take many words from its relative, the stage. One of the most important of these is "properties."

Present-day descendants of fine old theatrical families like the Barrymores (the Blythes), the Tearles, and the

Dennys, going back several generations, all say that "properties" had been in use long before the birth of their earliest acting ancestor.

Large and important as property departments have grown in the legitimate theatre, these are dwarfed by the property warehouses maintained by the larger studios. One ordinarily good-sized studio property department has an inventory of 350,000 articles, ranging from pins to Louis Quinze furniture, and from the mortgage on the old family homestead to a washtub of the 1880 era.

It has been indicated that technicians, interior decorators, and others deal with a wide variety of objects. To give any particular setting an authentic atmosphere, they must have a large central storehouse from which they may draw.

A description of one of these storehouses will aid those seriously striving to learn standards by which to evaluate accurately a good motion picture. Mistakes in atmospheric properties do more to destroy or to impair an illusion than perhaps any other single error which might be committed.

It is obvious that it would be fatal to put a mailbox on a street corner built for a period twenty years before box collection was introduced. And matches can scarcely be used in a setting dated for a time previous to the invention of this important necessity of modern life. To avoid mistakes correct properties must first be found; then used properly.

The property department focuses upon itself the careful attention of several other departments. The property

man himself is mainly occupied with the physical care of properties. He must know how to use them correctly. He must know where to find quickly in the enormous mass of his materials objects as small as a postage stamp of Jugoslavia. He must know the use of any required object, but he is not expected to know its authenticity. He gets his instructions relative to the historical accuracy of any object from the research department.

The property man is not asked to assume the responsibility of matching the right period furniture, the right draperies, or the right china. This is the work of a trained interior decorator who is a member of the varied technical staff of a modern studio property department. If flowers are to be used, the property man is not expected to superintend their arrangement or to know their symbolism, for an expert florist is available to give his advice.

Draperies are a most important subdivision of a screen property department. The interior decorator and the property man have available the services of a dozen or more men and women, experts in fabricating draperies and in the arrangement and hanging of tapestries. Should the interior decorator decide to re-cover a piece of furniture to make it more suitable for a certain pictorial ensemble, a complete upholstery shop is at hand.

Any property man working during the production of several different photoplays has thousands of different articles in his keeping in the course of a year. We have said that he need not know the exact historical "why" of each of these articles, although expert property men

invariably are, by virtue of their nearness to art subjects, highly competent in art research, but he is required to be deft in their handling. When a set of Lowestoft china like that used by George Washington is brought to a dining-room scene, an awkward "prop" man, through breakage, could cause delay and financial loss.

A prop man must have the instincts of an amateur detective. On a few hours' notice he must ferret out supplies of most incredible things. No one knows for what a director may ask in his desire to make a setting strikingly authentic.

One afternoon a director decided that the character of a long-deserted house would be best established if a flock of moths could stream from a clothes closet when it was opened. The next morning, fourteen hours later, moths by the hundred fluttered out of the closet! Even today the property man will not tell where he found them.

"That's my private secret," he said, when asked. "I may need moths in a hurry again!"

Well-known is the tale of the cockroaches required for *The Big House*. The scenario contained a scene in which the convicts staged races between their favorite cockroaches. The director decided to add this episode the day before the scene was to be shot.

The property man started out in high glee, for he expected no trouble. He had eaten in at least ten "greasy spoon" places in which he had seen cockroaches, but his spirits weakened as he went vainly from one restaurant to another. Restaurant owners, while roaches crawled on the walls back of them, would deny that

there had ever been one in their cafés. They were afraid it might be learned that the "movies" had staged a successful cockroach hunt in their establishments. But, finally, the weary searcher found a proprietor whose greed for money outweighed other considerations. In this restaurant one hundred fat roaches were triumphantly captured and carried before the cameras.

A record example of an effort to increase pictorial authenticity through completely correct "props" is found in an instance arising during the filming of *The Good Earth.* Part of this picture was made in China. The close-ups were photographed on farms reproduced in a valley of rolling hills at Chatsworth, California.

To make these reproduced farms duplicates of those in Hopei Province, John Miller, veteran property man, spent nearly a year in China. He went with a truck far into the Chinese countryside. He offered farmers flat sums for every movable object on their farms. Very often they refused, despite the lure of ready cash, for the Chinese reverence for old things is deeply rooted. But more than a sufficient number of farmers were found who would sell enough to fill three hundred cases with thousands of objects.

These cases included complete hand- and oxen-driven waterwheels which, when installed in California, lifted water three hundred feet up a terraced hillside, plows, grain grinders of stone, knives of various kinds, pots, dishes, condiment jars, beds, mattresses, and other priceless authentic properties. These objects were not new but worn. Many had been in actual service for a century or more. They added great value to the picture.

Three weeks after he had completed his work for *The Good Earth*, Miller was far at sea in a Gloucester fishing schooner, showing young Freddie Bartholomew the correct way to clean a Grand Banks codfish.

An interesting instance of the wide experience of a property man arose during the filming of a picture which required a certain shawl exactly like that worn by a figure in a large portrait which appeared prominently in an important scene. The property man was frantic as the time to exhibit the picture approached and he had not found the duplicate of the shawl. An order had been given to try to weave a shawl of the same pattern when an elderly lady entered the studio as a visitor. She was seen by the worried property man, who could hardly contain his excitement as he begged the owner for the loan of her shawl.

The property man has one of the most interesting and most constantly changing jobs in all the working world. He learns something of nearly every art and custom to be found in any country.

One man returned from fourteen months in darkest Africa where he became intimately familiar with Negro tribal gods, with native weapons and foods. The first job given him, when he had again settled into the studio routine, was the preparation of afternoon tea for a cozy foursome in a set representing a charming English home.

The property man belongs to an old profession, but the coming of the screen has added immeasurably to its interest and its responsibilities. But his work, under film conditions, must be supplemented by that of still other specialists.

The interior decorator in a studio property department is one technician who requires no special training to succeed in a motion picture studio. In a film plant he performs the same function he would if he were called to approve the furnishings and decorations of a home. He has made himself an expert in furniture of all periods and all nations.

He is never mentioned in publicity or advertising of a film, but if his touch were absent, the picture would suffer. Interior decorators in studios are not chosen until they have had years of experience in private practice. Many of them were heads of interior-decoration departments in large furniture stores. One well-known interior decorator, after he retired from screen work, reopened a business he had once owned in Paris, France, and prospered in it until his death.

Perhaps the most interesting function of the interior decorator is his connection with antique furniture. Really authentic period furniture is invaluable. A particular piece may not be needed for years, but when the decorator needs it, his need is intense. If it is not the property of the studio, he may find it difficult to buy or to borrow.

One studio has eighteen hundred genuine antiques. If all the antiques in all the studios were to be assembled in one place, the collection would probably be the largest in the world. And to studios, with their expert buyers, such antique collections become profitable investments. The collection mentioned could be sold to collectors for five times its cost.

Very valuable are "consecutive collections." One

A wealthy Eastern manufacturer thought it would be a good practical joke to put a goose in the Pullman drawing room of a departing friend. The bird escaped from the car. Subsequently, the manufacturer was sued for a large sum, and the owner of the goose collected. He proved that his goose was trained valuable property by exhibiting films showing the goose "acting."

During one of the Tarzan pictures, the director learned that it is easy enough to get a hippopotamus into water but sometimes hard to get him out. One morning a director scheduled a scene in a lake in which these big animals took part. In the afternoon he had planned to photograph them on land. It was three days before the last one could be induced to leave the lake.

Sometimes animals cause trouble by growing. In *Sequoia* one sees a beautiful little fawn. To get consecutive scenes of a fawn a half-dozen different fawns had to be used, for fawns grow rapidly and as they grow they lose their distinctive spotted coat. It was impossible to make the picture as fast as a certain fawn would grow.

In common studio practice, the property department is subsidiary to the chief studio art director, for minds particularly trained to artistic details are needed to give correct instructions to those persons who secure and handle so many different objects.

Upholsterers, silver platers, florists, interior decorators, drapery experts are all picked from persons who have had years of previous experience in regular commercial establishments employing such technicians. They adapt their work, of course, to the special requirements of the

studio they enter, but to enter a studio originally their greatest recommendation is their previous experience in their specialized line.

The unit property man assigned to secure, watch, and handle the properties for each separate production company is the one technician in a property department who is unique to a studio. Any studio property man could step on the stage of a theatre and handle the job of a theatre prop man, but the theatre prop man would find it difficult to enter a studio and take over the duties of his cinema brother.

The cleverness of a property man depends so much on experience that he develops chiefly by the apprentice method. Boys enter studio property departments about the age of sixteen or slightly older. For some years they move, dust, wipe, and polish heavy furniture. When their familiarity with the hundreds of thousands of objects with which they are surrounded is sufficient, they go on a production set as assistant property man.

The next step upwards for a clever, intelligent property man is the position of assistant director. This is a logical advance, for no one else in a production company, except the property man, is so thoroughly trained for effective organization of time and effort. Some of the most capable modern-day assistant directors received their advancement by way of the property department. It is a long trail to film success, but it is sure.

The work of the property man indicates how thoroughly Hollywood is related to the countless industries of the world.

11

COSTUMING THE PICTURE

MANY STUDENTS of the drama feel that the important place of costumes in dramatic presentations has been proven by the various attempts to present the plays of Shakespeare with actors dressed in modern clothes. The experiment undoubtedly has its value as laboratory study in actual college classes intent upon detailed study of Shakespeare. Students in such classes are endeavoring to trace the development of Shakespeare's literary style, and their concentration is of a scholarly nature.

But before audiences who came to such performances for the major purpose of being entertained, Shakespeare in modern dress has not been successful. The greatest lines of dialogue ever written lose their effect if the setting before which they are said is not in keeping with the historical period or the specific incident concerned. And even if the setting be accurate, there is still a loss of dramatic force unless costumes are correct for period and incident.

That is why the wardrobe department of a modern studio is almost the largest unit within any film plant. And that is also why inspired designers who can increase dramatic values with their costumes, have become among the most indispensable and highly paid technicians of the cinema.

With one large studio using more than eight hundred thousand yards of cloth per year, an approximate figure of seven million yards for all film-making plants would be conservative. This great array of materials would permit the making of a new dress, or a new suit of clothes, for 90 per cent of all the men, women, and children in the city of Chicago. Or it would make a triple width carpet between the cities of Los Angeles and San Francisco.

The experts handling such an expensively immense amount of cloth fall in two groups. They may be modern designers, Adrian, Newman, Banton, Wakeling, Omar Kiam, or Orry Kelly, or such a wizard in the production of "character" clothes as the late "Mother" Coulter.

"Mother" Coulter, who died happily at a ripe old age, wrapped up in her personality and her achievements all the challenge to the imagination there is in the work to which she gave her life. Her concern was not with what people will wear next summer, or fall, or winter. Her province was the past, and the unusual in costumes.

Nearly fifty years ago, Lucy Coulter, a young actress, used to while away stage waits by needlework. In New Orleans one night the wardrobe mistress of the company was taken ill, and "Mother" Coulter was pressed into service. Later she made costumes for Weber and Fields and for scores of other theatrical producers. She made Marie Dressler's first costume some forty years ago, and continued making all of her character costumes until Miss Dressler's death.

"Mother" Coulter used to relate humorously that the

largest costume she ever made was a pair or pants for an elephant, and the smallest a sweater for a white mouse. During her lifetime she made trailing draperies for a Cleopatra and hoopskirts for a Barbara Frietchie. As a costume "ager" Mrs. Coulter was esteemed as the greatest. She had on her cluttered desk a veritable witch's collection of secret brews and concoctions through and by which she could give new cloth the effect of wear and age.

The charm and delight there is in imaginative, creative work of this sort is perhaps proven by the fact that no one could make "Mother" Coulter retire. She literally "died in harness," beloved by the elder employees, adored by the younger to whom she was a wise and mellowed mother confessor.

Colorful as is the work of the character wardrobe mistress, the focal person in any modern film studio costume department is the head designer. He or she must be a person who dreams of beautiful and attractive clothes, and who can make those dreams a reality of fabricated cloths.

The designer may create clothes for an absolutely modern story of the present day, or conceive some fascinating series of costumes for a dance number, or dig deep into research for elaborate period presentations. That famous painting, *The Procession of the Magi*, was only one of hundreds photographed in Italian and French art galleries before work was started on the five thousand costumes for *Romeo and Juliet*.

To get a special effect a designer expends both his genius and his materials in a prodigal manner. Forty

costumes in *The Great Ziegfeld* required over fifty yards of light material each. The designer and the producer of the picture felt that the expenditure was more than justified when the first appearance of the costumes brought exclamations of delight from the audience at the first preview of the film.

When a modern story is to be made, the gown designer will prepare water-color sketches of his ideas. He may do fifty or sixty of these, offering three or four conceptions each of fifteen or more gowns that the feminine star will use during the picture. Then the procedure is as follows:

He goes over these sketches with the star, the director, and the associate producer.

Selections are made.

The gowns are then cut and assembled on forms. These forms are an exhibit in themselves, for they are the exact size of the player.

When an actress joins a studio, a form is modeled to her exact measurements. Thereafter, all but final fittings are made on this form. All forms are kept up-to-date each month, by padding or removing padding in order to keep pace with changes in the star's figure.

The system saves time. Because of it, fittings are unnecessary and in an hour a star can try on a dozen completed gowns with the certainty that only very minor changes, if any, will be necessary. While gowns for a new picture are being made, a star may continue work on a current production.

In emergencies, a well-equipped studio wardrobe can do seemingly miraculous things. A few years ago, a

New York stage actress, Madge Evans, was signed to appear opposite Ramon Novarro, a reigning male star. She could not leave the East until the end of the run of her play, which continued longer than she had expected.

Finally it was necessary to start the picture, and all scenes were completed which did not require her presence. Eventually she left for California. The day she arrived the last scene which could be made without her had been photographed. If she could not work immediately, the entire company would have to be idle, with resulting heavy financial loss.

Arriving at 5:45 P. M., she was taken to the studio. She put on make-up and donned her first gown. In one half hour she was working before the cameras, for her gown fitted her perfectly. It had been made with no other guide than a yardstick placed in a still picture with her. The photograph had been taken in New York. Solely through use of this comparison the wardrobe created a costume which required only one slight change at the neck.

If the settings and gowns are really fine, the audience should be entirely unconscious of them. They are part of the background before which our story moves. If any portion of this background becomes obtrusive, something is wrong.

The question of costume wardrobe is involved, and research is an important factor in answering it. A costume designer must maintain the known dress rules and the exceptions to them of the period with which he deals. Suppose careful research discovered that in the fifteenth century women wore four different kinds of

Wardrobe executive with costume designs

Repairing costumes for a talking picture version of *Romeo and Juliet*

More than fifty thousand pieces are filed in this library of hair

dresses at formal functions. If three of these were unbecoming to the star of the picture to be made, it is obvious which gown would be chosen.

Tailors, able to produce overnight a smooth-fitting uniform of the days of Napoleon, are standard figures among the eight hundred employees required in a typical wardrobe at the height of activity. Dye experts may try a dozen different tints for a certain costume before tests reveal which tint gives the best photographic effect. Dry cleaners work busily quite oblivious of the fact that drama is being photographed in the stages not far from their quarters.

Enough dry cleaning is done in a big studio to care for the needs of all the citizens in Sioux Falls, South Dakota, or Shamokin, Pennsylvania. Superfine needlework is in demand. For nine weeks one costume for Greta Garbo required the undivided attention of eight needlewomen from the great center of this craft, Guadalajara, Mexico.

The storeroom for raw materials in a big studio wardrobe is challenging to the imagination. When a Chinese picture was being made, hundreds of bolts of heavy, hand-woven cloth came in on every freighter from the Orient. They had been purchased in Chinese markets by special buyers sent westward for that purpose. There are bolts of heavy old-fashioned sateens; bolts of chiffon; of gingham and percale; spools of thread by the thousands, and needles by the millions.

Proper accessories are as important as the costume itself. Every wardrobe keeps hundreds of shoes of all styles and sizes, thousands of belt buckles and handbags,

and thousands of pieces of costume jewelry. A shoemaker is a regular member of personnel. Usually he has trained himself to make costume boots for period military productions. Thousands of women's hats are made yearly by expert milliners.

Studios furnish women with all their clothes, ancient or modern. Men buy their own modern costumes, but when a past time is to be portrayed, the clothes and accouterments required are made or bought for them. The men's wardrobe section is therefore comparatively small, but it has a great deal of color and character. It will offer uniforms for police in a dozen cities over a period of sixty or more years. It will have the uniforms of every army that ever marched to war, including those of the Pharaohs and the Caesars.

12

STRANGE JOBS

In addition to the trained workers already described, motion picture making requires many others. Among these is the "ager" who can take newly made furniture or walls and by use of planes, drawknives, sandpaper, putty, and paint give the illusion of wear the scene requires. Genuine antiques are not always available, particularly those of a remote period, or those which enjoyed brief popularity in their day. The work of aging furniture requires great care, and it cannot be done skilfully by those unfamiliar with the process.

There are also agers in the wardrobe department. A woman can take a new dress and by rubbing it on the floor give it the effect of years of wear in a few minutes. By dipping portions of the dress in coffee, she can give it a stain of age.

Each studio has two sets of garage mechanics, one for new cars, the other for automobiles over twenty years old. The second group are kept busy repairing ancient machines, for each studio has from two to a dozen old cars of several makes. These are frequently needed as atmosphere to set the time of a scene. And as old cars are often hard to secure when they are needed, studios find it wise to keep a number of such automobiles.

Every studio has a brass and iron foundry. It can

make bars for a Peruvian jail, wrought iron doors for the palace of a king, or, with more modern ornamentation, contribute to the growth of wrought iron usage in home decoration.

Every studio has its "horse wrangler." Usually he is not at the studio, but on a ranch where he trains horses for special stunts in a picture, and to which he brings horses from other sources when there is to be a scene requiring mounted men.

Thousands upon thousands of pounds of plaster are used each year in the "plaster" or "staff" shop. Moldings are made for every kind of architecture. Coats of arms are reproduced. Any competent plaster shop foreman will keep in readiness for a sudden call the plaster coats of arms of the Hohenzollerns of Germany, the late Romanoffs of Russia, the Windsors of England, and the Hapsburgs of Austria. Reproductions of famed statues are made as they are needed.

One brightly lighted building is used by men whose tools are capable of cutting a human hair in thirty parts. This would be one ten thousandth of an inch, the precision required for the repair of cameras and sound recording machines.

These men, too, are among the many individuals in a studio whose work goes entirely unsung, although decidedly honored within the family. There are no machines used in any form of manufacture which are more delicate than cameras or sound recorders. Often long and costly delays are obviated by the ability of these high-grade mechanics to diagnose a delicate maladjustment and repair it.

A studio armory may have up to five thousand weapons, ranging from the most modern weapons of several different present-day armies, through flintlocks down to and including very ancient catapults. Several catapults were built and operated by experts in weapons for the picture *Cleopatra,* the scene of which was laid in the time of the Caesars.

The professional studio sailor has been briefly mentioned. His duties may vary from the command of windjammers in pictures like *Captains Courageous, The Slave Ship,* and *Captain Blood* to the instruction of a child actor in tying different knots.

The wind-machine operator is unique to pictures. In the old days he gloried in noise. For silent pictures it did not matter if the gas engines driving his wind-making propellers made a tremendous clatter. But today he tends noiseless electric motors which drive the propellers with no more noise than a slight whir. The wind stirred up, however, is just as great!

Every studio has its "wild animal" man. His duties may be many or few, depending on the pictures being made with wild beasts. But there are always some animals in the studio zoo, and several studios maintain a large collection which they rent to other plants. A zoo of this sort would have lions—African and mountain—tigers, elephants, deer, antelope, buffalo, giraffes, and zebras as its nucleus.

In studios where films are prepared for foreign sale, keys with special foreign accents have to be placed on typewriters. And because most studio authors arose from newspaper work, and write with the pounding

two-fingered "hunt and peck" system, "mills," as professional writers call typing machines, get their worst mauling in a studio. A typewriter repair man with special training is required to keep the machines in order.

Perhaps it would not seem that keymakers would have many special duties in a studio, but a studio keymaker averages three thousand keys for offices and for vaults. Great manuscripts, fine furniture, all of these things are precious, and need to be safeguarded.

One of the things guarded most carefully are new gowns made by famous studio designers. Outside gown manufacturers have become so aware of the great sales values accruing to a new gown worn by a popular feminine star, that it has been suspected that they keep agents in the various plants to tell them of a new design. To guard such designs until the gown appears in a picture, locks are changed frequently.

As this is a business of pictures naturally its most effective advertising is by and with pictures. For a studio to make and deliver to theatres, newspapers, and magazines all over the world, a million "prints" of individual still photographs of stars and scenes is not uncommon. These photographs pour in an increasing stream from the publicity and advertising departments.

The publicity department requires as a prerequisite of employment for its key positions four or five years of service as a reporter for an important newspaper. This is needed because this department supplies stories of studio activities, with illustrations, to thousands of newspapers and magazines on all parts of the globe. So much attention is focused on film players by their

appearances on the screens of the world theatres that their comings and goings have become "news." What they do and where they go is of interest to millions.

Studio publicity men translate what happens within their studio into accustomed journalistic vernacular. To give an idea of the extent of newspaper and magazine demand for data about film personalities and film making, over three hundred different newspapers, magazines, and telegraphic news syndicates maintain paid reporters in Hollywood to gather such material. Much of the effort of a studio publicity department is expended to discover items for this important group, responsible for at least 60 per cent of the film news seen in the periodical columns of the world.

A studio advertising department may create a complete advertising campaign, or merely outline ideas in sketch form which will be completed in New York. A studio advertising department recruits some of its employees from commercial advertising agencies, but most of its people come to it after four years or more of experience in writing advertisements for theatres in various parts of the country. Besides copy writers, a studio advertising department employs sketch artists to prepare layouts and drawings.

Finally, the average studio advertising office usually prepares "trailers" for use by theatres. "Trailers" are a form of advertising which has reached its highest development in the film field. To make trailers, a competent film editor is joined with a good advertising copy writer. The film editor picks out certain key scenes of a coming picture. The copy writer supplies intriguing

explanatory lines, calculated to make those in the audience wish to see the picture thus graphically advertised. The trailer is usually shown for a week before the main picture is to be exhibited.

Office boys would not, it would seem, be anything but office boys, whether working in a studio or the outer office of a chewing gum factory. But office boys in motion picture plants are chosen with great care. Inasmuch as most of the work in a studio requires specialized training, there are few places for ambitious young men without such special training, except as office boys. Therefore one finds that a large percentage of youngsters in a film making establishment are either college graduates, or honor students from a high school.

It is known that these minor jobs furnish the best way to get into a studio, in which one can be in contact with all the various technical activities. For this reason studios have long waiting lists and pick and choose carefully. As studios are immense places, running errands is a tiresome chore and an office boy will easily cover twenty miles on a busy day. But he sees everything, meets everybody, and after two or three years may be taken into one of the departments to begin his education in film making.

It should be evident by now that no man or woman in any profession, no tinsmith, no manicurist, no marine engineer, to mention only a few, can stand back and say, "The movies. I haven't anything in common with them." There is hardly a world activity that regularly or periodically does not make its contribution to a motion picture. Even the science of bacteriology offered

special advice in the filming of *The Story of Louis Pasteur.*

Passenger automobiles and big busses transport players from studios to locations. Such conveyances may carry a star in stylish dress on one trip. On the next, a sudden frantic call from an assistant director might cause the driver to load a box of frozen codfish or half a dozen dynamite caps. Under the transportation department are nearly two hundred other wheeled vehicles, portable electric generation outfits for use on location, portable loud-speaker wagons for the long-distance transmission of a director's orders, and portable wind-making machines.

An emergency hospital is available for the actor with a frog in his throat. In a large studio, two nurses are always busy binding the smashed finger of a carpenter, or removing a foreign substance from the eye of a cameraman.

The physical vastness of a film studio is hard to express in words but if you owned a motion picture studio you could:

Pay the electric light bills for 100,000 five-room houses each month. The average small home uses six kilowatt hours of electricity each month; an average big studio requires 600,000.

Insulate a ten-story building so that yells and screams would not disturb the neighbors in any or all of its 500 rooms.

Build with the gravel and cement annually required an artificial lake having a dam fifteen feet

thick, fifty feet high, and one hundred feet long.

Stock, from the grocery and hardware supplies, a general store large enough to supply a city of 20,000 people.

Shave more than 1,200 men daily, from New Year's Day to Christmas, with the razor blades used in the film editing department.

Whitewash the political scandals of a large city with 5,800 gallons of flat paint.

And these comparisons are on the basis of but one studio. For the industry as a whole they can be multiplied at least ten times.

13

THE CASTING DIRECTOR

PERHAPS THE GREATEST achievement of the film producer is the manner in which he has developed a flawless co-operative system wherein each separate artist contributes his finished tile to the film mosaic. He merges his work imperceptibly into that of the man or woman who preceded him, and leaves his own contribution so that, in its turn, it fits smoothly into the tiles to be laid by the artisans that follow. To use a term from the athletic field, "team work" has been developed to a fine point in the modern studio. Without such co-operation the advances achieved by the industry in such a short period would have been impossible.

When the conductor of a symphony lifts his hands and begins the direction of his musicians, their co-ordination determines the quality of the musical result, for each musician is trained to follow the conductor. This fits the finely integrated work of a film studio.

It should be clear that a great motion picture is entitled to more praise for perfect execution than almost any example from the other arts. In a film there are many background elements that could, by being suddenly obtrusive, impair the flow and power of the whole. Likewise if this happens in musical orchestration the result would be discord.

Among other things, the human background must accurately reflect time, place, and customs, and it must merge quietly into the whole general scheme of the mosaic. There have been many comments in the press, praising the realism of the "human atmosphere" in various pictures. Among the most outstanding of these were the comments upon the northern natives in *Eskimo;* the surgeon in *Men in White;* the Russian peasants of *Anna Karenina;* the newspaper reporters of *Five Star Final;* the Indian-fighting army men of *The Plainsman.*

But with the bouquets come brickbats. Letters are received which say, "Where did you ever get the idea that a big bum like So-and-So looks like a banker?" or "You cast Miss Such-and-Such as a society girl when she looks more like a fat laundress."

An expert studio casting director, because his art is not an exact science, relies upon an intuitive judgment, a trained memory, and years of association with plays and players.

Every casting department has cross-indexed files to which the casting director may refer. These carry the names and abilities of hundreds of actors and actresses of all ages. The Central Casting Corporation, with larger files containing more names, is kept with equal exactness.

A casting director will sometimes use his indexed files for routine casting of small rôles. But generally touches of special charm arise from the large gallery of portraits hung in the halls of the casting director's mind. A gruff ticket agent whose few lines bring a laugh, or a pathetic mother whose child is killed by a truck—rôles adding great emotional value to a picture—demand inspired

casting. A good casting director needs to file in his mind at least five thousand faces, and know the acting ability of each of these players.

Picture a scene in which the leading lady stops to examine the work of some dear old woman, perhaps a seamstress. From the flow of the story the casting director knows whether a moment of pathos or one of comedy is needed. Filed under "Pathetic Women," if that is the touch required, there may be forty names. But in all probability the casting director decides out of his memory which one of the forty fits this part, and he only reaches for his indexed book to find her telephone number.

Roughly, in every picture there are approximately twelve "principals," the characters about whom the mechanics of the story revolve. The leading two or three of these are called "stars," the others "supporting players." They represent the aristocracy of acting. In a large studio about 80 per cent of these "top flight" players will be recruited from the plant's own "stock company." They will be under contract to that studio from one to seven years, appearing in various pictures as assigned.

The remaining 20 per cent will be "free-lance" players who are in one studio today, another tomorrow. Below the principals in rank are the secondary or background players. Their importance is apparent. They are essential to the human atmospheric accuracy of the finished picture. At one time, more than seventeen thousand individuals had their names registered in the industry for atmosphere work.

The term "extra" which seems so firmly set in the minds of the public as a name for background players, is never used in the studios. It implies unimportance, and the competent minor player is anything but unimportant. He is a trained artisan. He may lack the ability or the face or the body to enact the rôle of Charles Laughton; but, possessed of the "finest cauliflower ear and broken nose in America," he is very important for certain deft character touches. He knows by experience how to conduct himself before the camera. He knows how to move naturally in a crowd.

He resents the diminution of his importance implied in the term "extra," and hence it has practically disappeared from the modern film vocabulary. The experienced minor player is a valuable and respected member of any film-making community. In fact, the great concentration of minor players in Hollywood has been one reason why this community has retained its film production leadership.

Eighty per cent of the types needed for dramatic motion pictures fall into about forty-one groups. For men the groups include: dress men, juveniles, bell hops, bald men, comics, police, collegians, butlers, beards (sometimes listed by the slang term "beavers"), riders, freaks, tall men, short men, dwarfs, stunt men, dope fiends (in appearance), military, character men (a general characterization in which may be found, perhaps, judges, lawyers, doctors, bill collectors), tough men, Negroes, Orientals, Hawaiians, Latin types, German types, Slavic types.

For women the groups include: dress women (mean-

ing intelligent "society" types who can wear beautiful clothes charmingly), pretty girls (what a list this is!), homely girls, stenographers, tall women, short women, stunt women, maids, character women, women riders, dowagers, healthy children (children are sometimes in a separate file, sometimes in the women's file), peaked children, Negroes, Hawaiians, Orientals, Latin types, German types, and Slavic types.

Should there come a request for an unusual type not frequently needed, an efficient casting director has his sources of supply which he may tap by making a few telephone calls. A certain young medical interne in a Los Angeles hospital augments his income, and brings needed financial aid to many unfortunates, by keeping a casting index of freak medical cases. He can supply on demand men and women with both or either legs, arms, or eyes missing. In an hour he can send over a man with the "shakes," or a woman with a harelip. He once provided a studio with a woman who had a case of angina pectoris—the sound of whose uncertain heart beat was vital in establishing a certain point in *The Bishop Murder Case.*

The card indexes used are established in the best tradition. Typed information is on the front, and a small picture of the player on the back. The front of the card gives these data: name, address, telephone, weekly salary, daily salary, age, weight, height, general appearance, color of eyes, carriage, wardrobe (the average minor player has an advantage in employment if he has sport clothes, evening wear, and street clothes of varied pattern), class, subclass, coloring, parts played.

The class might be "pretty girl," the subclass "Latin type"; or "tough men," the subtype "Oriental." It will be interesting to analyze more carefully several of the thirty-nine subdivisions into which the casting director allocates the humans of the world.

"Beards" is a class which sounds interesting, if not romantic. (And there is less romance in the slang expression, "Beavers"!) The importance of this subdivision is seen when a costume picture is made—a *Parnell* or a *Maytime* or a *House of Rothschild*. Into this class are grouped all men who either have prominent beards, or can grow them quickly.

One man, Professor Schmalz (all names used are fictitious), who has a fine European "spade beard," has played thousands of counts, diplomats, and types of this sort.

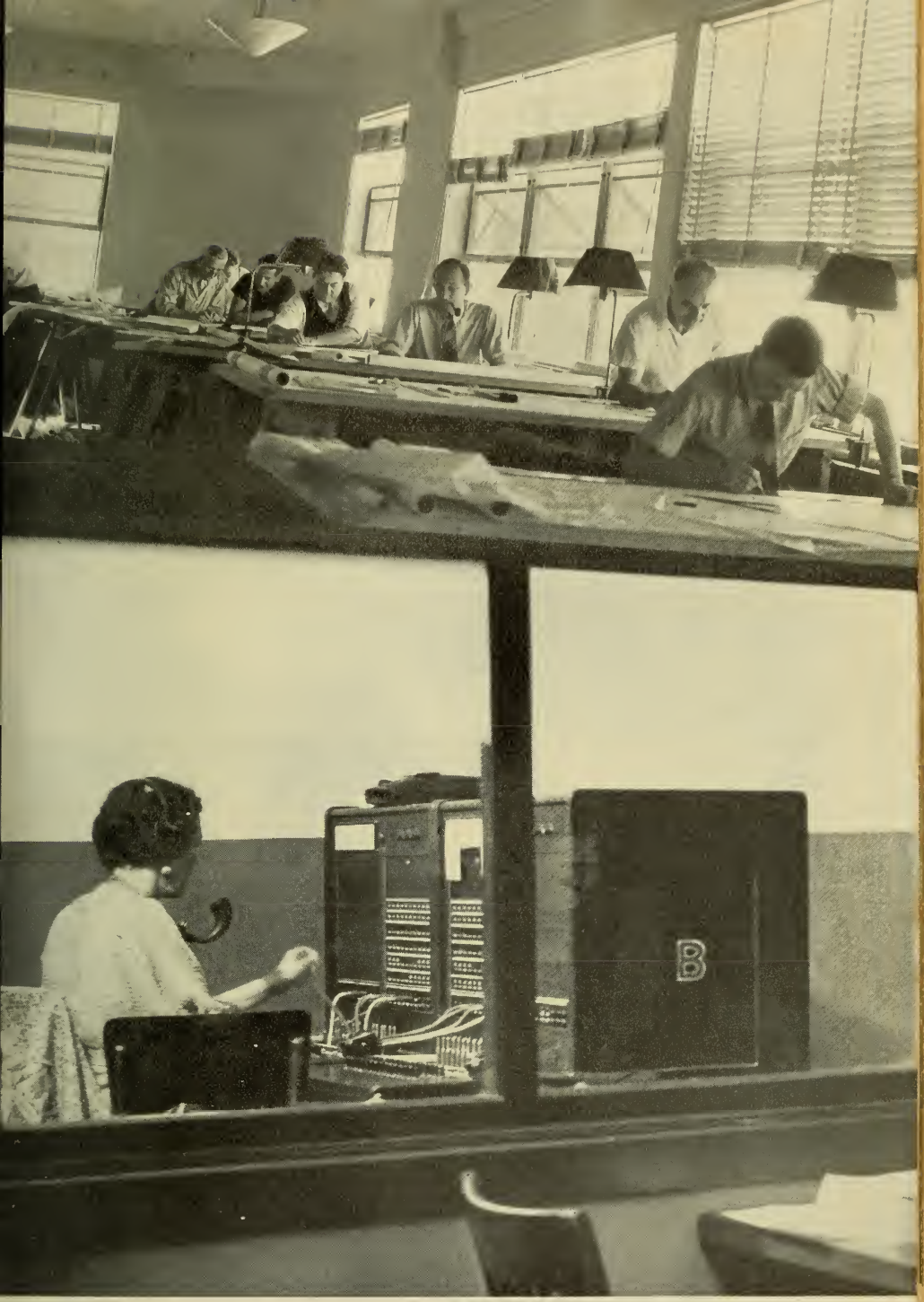
"L. Nardon" is listed as "concert singer in appearance, wears a Vandyke."

"H. Frank," one finds, "has a long, full gray beard, excellent for Westerns."

There is written of another: "Beard grows very fast, can develop a swell, tough stubble overnight." This man keeps busy in underworld pictures, in characterizations presupposing either lack of or indifference to razors.

"Dress men" is a broad class, which includes fairly good-looking men who are at home in well-cut business or dress clothes. You would not find under "Dress men" one who writes on his application: "Tough mechanic with two teeth missing."

There are two classes which are decidedly not set in



Architects in a studio

Central Casting Corporation, where 1000 calls an hour are received

Supporting players in a last-minute rush to complete make-ups

one mold. These are "character men" and "character women." Out of these are secured those individualistic persons, who, when carefully chosen, greatly increase the authenticity of a specific picture. One recalls the little old woman coming out of the elevator in *Grand Hotel*, the Swedish masseuse in *Love Is News*, the provincial storekeeper in *Rose-Marie*. It is in the selection of these that the casting director reveals his best abilities.

As a guide to the casting director, "remarks" are carefully worded in his two files. The following are illustrative:

"Mary Ames" is thirty-six years old, five feet eight inches tall, weighs 138 pounds, prim, stern, society grande dames, or hard-hearted old aunts."

"Margaret Graham, 45," is briefly listed as "very Scotch."

"Martha Hines," we find, is "five feet seven, excellent for mothers and kindly landladies."

"Helen Bane" is a "sweet character type, good as a mother or grandmother." There is evidently a casting difference in grandmothers, for "Florence Lane" is listed under "refined grandmothers."

"Edward Brooks," who is listed as "a magnificent drunk," has been on the "water wagon" for nine years.

"Emmett Hope" is listed as "like Judge Ben Lindsey."

"Jimmy Parker" has been a devout church member for years, but he makes his living as a successful cinematic "crook."

"John Wade, 57, five feet one and one-half inches tall, weighing 160 pounds," is listed as a "Sea Dog."

After Tom Kane's name appears "Character, Comic, Crook, Bumps." These words mean that Mr. Kane is a good journeyman laugh-getter, that in appearance he is a crook, and that for a consideration he is not averse to being "bumped" from windows by police, or handled roughly. This gentleman used to be a professional acrobat and knows how to handle his body to avoid injury. Clark Gable tossed him down a ladder in *China Seas*.

The Casting Corporation also aids the studios in getting specialized types not frequently used. It has lists of practical seamen and both infantry and cavalry groups of ex-soldiers. Players who closely resemble famed historical characters are carefully listed in casting offices. When needed for a picture, it is vital for a casting director to know where they can be found.

If a General Pershing is wanted, the telephone quickly brings Joseph W. Gerard to the studio. Thomas Pogue greatly resembles Benjamin Franklin. A very little make-up, mostly mustache, transforms Sidney Blackmer into Theodore Roosevelt. Frank McGlynn has played Abraham Lincoln for a score of years.

A list of "atmosphere" players needed for the next day is filed at 3:00 P. M. on the preceding day. The players are notified by telephone when to report and what wardrobe and properties they are to bring from those departments. After the player arrives in the morning, he is sent to a dressing room with orders to report in make-up to a certain assistant director at a certain hour. This may be 9:00 A. M. if the set is in the studio, or 6:00 A. M. if the company is working at a distant "location."

The studio casting director actually selects only three out of four levels of players: first, the stars; second, the secondary principals; third, the "bits," (atmosphere players, such as shoe clerks or newsboys, who have one or more lines to speak).

The fourth and last level is largely composed of "crowd people." In the old days, studio casting directors also picked "crowd people." But it was found that both confusion and downright hardship and discomfort to the lesser paid players was an inevitable result. Players in this lower level were forced to telephone, individually, some fifteen studio casting offices daily. In addition, they rushed frantically from one studio to another to sustain their connections. Studio telephone connections were swamped, and the personnel found itself with insufficient time to take care of anyone properly.

To avoid these difficulties which arose, on December 4, 1925, the Central Casting Corporation was organized. It is a unique service organization formed and owned by the Association of Motion Picture Producers. Those companies which are members pay the expenses for the service of this organization.

The advantages of this bureau are several. It makes it necessary for a minor player to telephone only once a day to ascertain work possibilities. It permits the casting directors of many studios to file separately bulk orders such as "forty-five police officers," "five hundred members of an Irish mob," "twelve bookkeepers," "twenty-seven automobile mechanics," "two-thousand Chinese."

The operation of the bureau is simple. A specially constructed switchboard at the headquarters of the Central Casting Corporation enables instant handling of telephone calls. At peak times—late in the afternoon—these reach one thousand an hour.

A registration with the Central Casting Corporation in no way binds the minor player. It merely registers him for crowd work if he needs it. It does not keep him from accepting a better job in the "bit" or even the "featured players" level, if one should be offered. On the other hand, the Corporation promises no certain number of working days each week. It offers merely a connection between day-work actors and the employers, eliminating the duplication of effort and energy required before this plan was made effective.

The Casting Corporation places about six hundred players a day. It saves these players a quarter of a million dollars annually in fees which agents formerly charged to get them jobs. But it also has twelve thousand registrants, and no new names were added between 1935 and 1937.

Recent statistics show that only fifty-eight out of the fifty-five hundred registered male players average three days or more each week. Only twenty women out of the sixty-five hundred registered average three working days a week. Out of the fifteen hundred children the average for each child is about four days a year.[1]

The Casting Corporation has consistently held that for anyone to support himself or herself with work in this "bulk" category of minor players is next to an im-

[1] Figures supplied by Association of Motion Picture Producers.

possibility. The Corporation steadily discourages anyone's going to Hollywood for the purpose of securing employment through it. Its ranks are refilled mostly from within the industry by one-time players of higher grade who for various reasons no longer seek steady employment but thus keep their connection with a profession they love.

The Corporation points out to the ambitious that its lists are not a good start toward stardom. While an occasional person has risen to eminence out of the minor ranks, there are only about twelve such instances in the ten-year history of Central Casting Corporation.

It cannot be emphasized too greatly that the essentially human background of any motion picture constitutes one of its greatest assets. The psychological appeal of the picture is stirred by it. The drama of commonplace living is accentuated. The audience becomes unconsciously trained in its ability to sort dramatic falsities from dramatic truths. To trained observers a badly cast minor part, played insincerely and incompetently, is as disconcerting as discordant music to a musician.

14

STARS

The term "star" as it is applied today to individuals is misused and misunderstood. Because there is so much glamour and appeal to youth and exceptional physical beauty, some have come to think of this expression only as it applies to a few young men and women of the screen.

But these striking looking youngsters, vivid, exotic, different, represent but a few of the world's stars. The word in its broader meaning concerns any man, woman, child, or animal who becomes a definite and outstanding leader in whatever he, she, or it may be doing. Lindbergh, Louis Pasteur, Caxton, the first English printer, and the dog Rin-Tin-Tin were stars. Shirley Temple, little more than a baby, has captured the hearts of millions. A tired elderly woman, Marie Dressler, became greater than most of the young players of today's films may ever hope to be.

In fact, even in motion pictures, foresighted people look forward to the day when acting will not be the only road to stardom. When the educational film reaches its full stature it is possible to conceive that some particularly dynamic lecturer in educational work will enjoy a popularity equal to that achieved by the Ronald Colmans and the Loretta Youngs of today.

This matter of screen personality has interesting angles. Two people who are equally charming when seen face to face are photographed. The photograph adds strength to the personality of one, the other "fades out" and becomes less powerful. This is the reason why some people become film stars and why, when they achieve this eminence, they are paid large salaries.

No phase of picture making has as much rumor and untruth connected with it as that of star compensation. To hear some of the misinformed comment, it would seem that stars get all the money required to make a modern picture. As a matter of fact the pennies of each picture production dollar are spent approximately as follows: stories, 15.95; directors and cameramen, 13.20; sets, 9.90; costumes, 2.75; locations, 2.75; raw materials, 7.70; administration, 23.10; and for all players from stars to the last member of a crowd scene, 24.65.[1]

Perhaps the position of a star may be explained by saying that he is like an inventor who has developed a new invention. Wishing to protect his cleverness the government grants him a patent. That patent guarantees the profits on the invention exclusively to him for a term of years. In the same manner, in a personality which can attract the attention of the public, the star has an asset that is exclusive to him or to her.

Suppose that it were possible to have two men so alike that both could travel under the name of Charles Chaplin. Let us have both of these Chaplins make the same story with the same cast.

Put the finished pictures in two theatres side by side.

[1] Figures supplied by Association of Motion Picture Producers.

The first night both theatres would be packed, but on the second night only the theatre having the film with the real Chaplin would attract a crowd. Its neighbor, showing the film of a man looking like Chaplin but without his genius and creative ability, would be empty. Starring, therefore, is merely an expression to indicate supreme attraction values.

A star in films can be young and beautiful, or old and wrinkled. A star can be a young child, or an animal. A star, once developed, once proven by the crowds attending pictures in which he or she appears, becomes a very valuable asset. Companies have indicated their opinion of such asset values by insuring individual stars for one million dollars or more.

Stars in the entertainment field are not an original development of pictures. In the Roman arena there were star gladiators. During the Middle Ages, there were star minstrels, traveling from castle to castle. There are star bullfighters and star ball players. And the stage has had such stars for hundreds of years.

No producer, then, needs coaching in the value of stars. There was a time when producers attempted to "star" directors and writers. But great as are the contributions of these technicians to each film, their appeal to the public is not a fraction of that possessed by players.

The business of finding stars and developing them has become a semiscience. Once ambitious youngsters and older actors flocked to Hollywood. Now they stay at home, knowing that a nation-wide "scout" system makes certain that any success they achieve in an amateur stage

performance will be seen. When discovered, if they possess exceptional talent, they will be sent to a studio with a contract for three months.

There a "test" will be made. Once, in silent picture days, tests were quite casual. The player walked toward the camera, turned, smiled. But today, there is dialogue, and a test usually consists of several scenes from an actual picture. Sets are built and other actors hired to support the candidates. The cost of making the cheapest test is several hundred dollars.

If the test is satisfactory the candidate enters a practice "school." This school is exclusive to its studio and is headed by two or more trained directors of acting and voice. These give daily individual instructions to the newcomers in acting, correct placing of the voice, and how to sit, stand, and walk.

Several studios cast their young players in actual stage plays, which are presented only for one night to an audience composed entirely of producers, directors, writers, and other players. In this manner the fundamentals of acting are drilled into a candidate, and minor faults and mannerisms are ironed out before the young player is permitted to appear in front of the cameras. If the player reaches this stage, his or her option will have been extended to six months.

Then for a long period the player appears in minor parts, many different ones, to show every facet of his personality. In about a year and a half may come the first real opportunity for self-expression—a subordinate part. By this time the player is fairly well-established, but there is still a question whether he will be a star, or

just another one of hundreds of competent but comparatively unpublicized "feature players."

Good feature players are vital to good pictures. The public would soon notice their absence. But the public usually places feature players into some careless generality like "Joan Crawford had a good cast." Therefore, the compensation of the feature player remains very much under that of the star. A good feature player earns a comfortable living, but little more.

But the personality that suddenly starts to draw theatregoers into a playhouse by the hundreds of thousands receives rewards for possession of an exclusive and most valuable commodity.

In the days of silent pictures, physical personality alone counted. One actor who could not speak above a whisper made a fortune. A woman star became the top "drawing card" of American films before she could speak a correct sentence in English.

But today a prerequisite of acting in talking pictures is a high school diploma. Studio coaches have found that young people who have less education usually have faults in diction which are too deeply rooted to correct. Candidates are seldom signed for a studio unless they have shown a previous predilection for acting by appearances in college or high school plays, or in little theatre productions.

Sometimes there is a long wait before a star is discovered. Marie Dressler had been brought to Hollywood to star in silent pictures. She made one great film. Then she started steadily downgrade. She was not

in demand and producers avoided her. She was financially insolvent when talking pictures came in. In fact, completely discouraged, she had gone to New York with the intention of making her future home in Paris. She was called back for one part, "Marthy" in *Anna Christie*. Then, when more than sixty years of age, she became overnight the greatest single "drawing card" the screen has known.

In Marie Dressler's case the accident of the arrival of talking pictures was the major cause for her startling comeback. She had been a very great stage comedienne. Her training in the comic speaking and timing of lines had included that greatest of all training grounds, the immortal company of Weber and Fields.

In silent pictures, her personality had not "caught on." But in *Anna Christie* fat, sloppy, disreputable "Marthy" wanders into a dingy waterfront café. She opens her mouth, and from the moment of her first line we take her to our hearts. The sudden rise of this woman—tired, worn, and more than sixty years old—is one of the most interesting stories of Hollywood. In a year a woman who had sought in vain for tiny "bit" parts at every studio was the greatest money-maker the screen has ever known. She did not possess glamour, that much overworked word, but she did have a far more important asset, heart interest. She could enter our hearts with a quick lift of her massive, homely face, with a quiver of her big lips, and there she remained enthroned.

Then there are stars who "fade out" after a short success under one management, but who rise into the

skies brighter than ever when given different stories and different direction. Ability to sense where a star has been handled incorrectly is, of course, one of the special and valuable talents of a successful producer or director.

While stars are being considered, it is wise to eliminate the common misunderstanding of the word "double." The man or woman in the street hears of "stand-ins," the persons who replace the stars in front of the photographic lights while long camera or sound recorder adjustments are made, and confuses them with "doubles."

"Stand-ins" are not doubles. Unlike doubles they need not resemble the star at all. There has been much publicity given to the fact that stars do not do dangerous scenes; that doubles, persons who look exactly like them, are used, but this is untrue. Except in very rare instances, in which the star could not possibly master in a short time the physical dexterity needed to avoid injury in a dangerous scene, he or she does the action personally.

As a matter of fact stars are very sensitive on the subject of doubles, and habitually refuse to have them, unless forced to do so by their producers.

Wallace Beery, a very competent aviator, refuses to let anyone else do his airplane scenes. William Powell exploded in rage once when he heard some person in a theatre audience explain how a "double" had done the scenes in *Libeled Lady*, in which he is carried for hundreds of yards down the current of a swift, rocky mountain stream.

"Doubles" are too often confused with "stunt men." When at all possible, stars will do their own stunts. But when the action requires a stunt to be performed by a minor player, a stunt man or woman, one willing to take great physical risks, is employed.

Dick Grace, a daring flyer, cannot remember how many planes he has crashed.

One of the most spectacular stunts on record was in *Manslaughter*. A player, dressed as a motorcycle officer and going fifty miles an hour, crashed into a standing automobile and was thrown over the motor onto pads. In the picture story he dies; but the stunt was figured so closely for safety precautions that Grace came out with only a wrenched shoulder. He went on to do hundreds of other similar stunts.

The life of a star on the screen is not as long as it would be on the stage. Too much familiarity dims the value of the star's face. The average life of a picture star is about seven years. In two decades on the stage it is estimated that the great Maude Adams did not appear before more than ten million people. Were Maude Adams a film star today, twice that number would see her in a single evening.

This comparatively short life of a screen star once brought the heartfelt remark from a studio technician, "I'm glad I'm not a star."

He meant by this that in his own obscure place in the studio he did not earn any more than he would in the same profession outside, but he could without interruption earn his salary—a good living wage, until he was sixty or seventy. He would be able to pursue a

profession or an art he loved as long as he lived and while so doing he would have privacy.

No one realizes the deep values of a private life until he sees the smothering adulation which the public lavishes upon film stars. When a star leaves a studio after eight to twelve hours of hard mental concentration, or physical action—for acting is exhausting labor—he is met at the gates by autograph hunters. He must smile and be pleasant. He stops at a filling station to get gasoline, and again the curious rush upon him. If he goes to Paris he cannot examine the art treasures of the Louvre, or the tomb of Napoleon, in quiet. Nor can he travel comfortably in public places without a police escort.

From the financial side his position is far from being as attractive as it seems. He earns his big salary for his exclusive commodity, his personality, for perhaps seven years, but he is required to pay taxes exactly as if he were to make that salary all his life. He has exceptional expenses for clothes and for a staff to handle his enormous mail. And from his salary he must save enough to maintain himself and his family, if he has one, the remainder of his life. For when the public tire of a star, they do so very thoroughly. Quite callously they forget in a year a star they once idolized. In two years they may not remember his name.

Recently a star very greatly admired fifteen years ago walked into a studio employing twenty-two hundred people. Although he was among picture people, there were not twenty who recognized him. The star of today is always faced with the fact that, while still

young, with his greatest acting development often still to come, his public will eventually drop away from him. There will be no work for him except in minor, obscure parts, so he may be forced to enter an entirely new profession, usually either screen writing or screen direction.

And comparatively few become either writers or directors. It is an axiom in the theatrical business, "Once an actor, always an actor." One star of the past lives today on a beautiful ranch outside of Los Angeles. He was shrewd in his investments and has ample means. But an actor to his fingertips, he is an unhappy man. Gladly he would part with his fortune if he could be assured that once more his name would appear above the name of a picture, in the "star billing."

The star has his moment of shining glory, but he also has definite worries. If he does not go into some other profession, such as directing, it is doubtful whether in the end, he attains as much ultimate satisfaction as an obscure technician in his own studio. The strange but definite manner in which screen popularity disappears, overnight, gives the actor a powerful psychological body blow.

15

MAKING FOLKS OVER

THE PATIENCE of Job is required in order to undergo the hours and hours of sitting needed to create a complicated make-up for a talking picture. Charles Laughton was not needed on one set until 9:00 A. M., but for weeks he breakfasted at 5:00 o'clock. The make-up artist took two hours to create the luxuriant beard needed for the playing of Mr. Barrett in *The Barretts of Wimpole Street.* He needed two and one-half hours to create scores of lines and wrinkles for the rôle of eighty-year-old Madelon Claudet, played by Helen Hayes.

Preparing the deep, ugly scar on Lewis Stone's face in *Grand Hotel* required great skill and much time. Modern make-up technique has eliminated former discomforts. Mr. Stone has described the itching, the excessive heat caused by the surface of his *Grand Hotel* scar, as "the tortures of the damned." The thick skin of a rare fish, fine cotton, and collodion were the principal ingredients of this make-up. It was with fish-skin and collodion that Stone's right ear was molded close to his head to give one side of his face an earless appearance.

Collodion, likewise, was the basis of the scar worn by Johnny Weissmuller in *Tarzan and His Mate.* The skin of Weissmuller's right temple was pinched together

Jack Dawn, make-up expert, with Reginald Denny

Luise Rainer becomes Chinese for *The Good Earth*
Hair by hair, the wig expert builds up a hairpiece

and held by drying collodion. Clever painting with water colors by a make-up artist completed the scarred appearance. Today, neither Stone nor Weissmuller would have the discomfort they endured when they wore those early make-ups. The Westmores (Wallace, Ernest, and Percy), Jack Dawn, and every other studio make-up expert is constantly developing new methods. Their discoveries are carefully guarded.

Perhaps one of the most recent and important discoveries was used for the first time during the production of *The Good Earth*. In this picture, it was necessary to transform Luise Rainer, Paul Muni, and other white players into Chinese.

The old method of securing slanted eyes by pulling their corners and fastening them with invisible fishskin is painful and not particularly effective. The new method, as invented by Jack Dawn, puts molded sections of thin, light, skinlike material over the actor's own skin. First of all, a clay model is made of the face desired. Then dimensions are compared between this face and that of the actor to play the part. Where the actor's face needs to be built up, it is done by molded layers of the new chemical formula.

Because the new face is built and the player's own face is not malformed or twisted in any artificial manner, he can act his rôle with no physical discomfort. By this method an exact duplication of another's face may be obtained. Recently, with the actual death mask of Napoleon as a guide, Charles Boyer, an actor, was able to make over his features into an exact likeness of the Corsican adventurer.

Those who consider the great Lon Chaney the "greatest artist of make-up who ever lived" wonder what heights Chaney might have attained had he possessed the advantage of these new discoveries. Chaney was ahead of his time in make-up and had many personal secrets which died with him. But, clever as he was, had he known the newer methods now available he could have avoided much of the discomfort he felt when he rehearsed and acted the rôle of Quasimodo in *The Hunchback of Notre Dame.*

Ability to add or subtract age is the mark of the relative genius of a make-up artist. Age first attacks the neck. Shadows are painted in with reds or browns, and cords are intensified and made stringy by the same coloration. Scores of grayish-blue or black lines, no larger than a thin thread, are placed at the eyes and the mouth. The inside of the eyelids are reddened, and shadows, referred to as "balloon tires," are outlined under the eyes. The illusion of fat, or the lack of it, is easily established by clever use of red. Age is removed by a reversal of the means described to add it.

Male players with strong lines of character in their faces frequently avoid make-up except where it is required for radical changes of appearance. Wallace Beery and Ronald Colman, as examples, find that the distinctive facial configurations nature gave them not only fit without make-up into many characterizations, but have become personal trade-marks of great monetary value.

Young leading men and women, whose youth is a major asset, usually wear a clay-yellow make-up, which gives them a clear, white complexion on the screen.

Young people with red cheeks are practically forced into this make-up, because too much red in the face often photographs as a black, or grayish blotch.

A seemingly perfect make-up may prove unsuitable when tested by actual photography. Only long experience with cameras and film brings to make-up artists a sixth sense of how a make-up will photograph and even then the best of them sometimes guess wrong.

"Most of our unpleasant surprises," Jack Dawn has said, "come from reflected light. We know what to expect from the spectrum of the direct lights which we use in our make-up rooms. But when that light hits something red, say a red dress, it reflects with an increased amount of that color. Red, of course, photographs, but it photographs dark.

"Reflections from a red dress on the cheeks of a narrow face makes these cheeks appear sallow on the screen. High lights become middle tones, and the delicacy of true beauty can be distorted into ugliness by the wrong use of color.

"The darkness with which red photographs is just as conspicuous on the screen as the color red is vividly arresting when it is seen. Red must be applied very carefully or the design of a beautiful girl's face will be spoiled.

"An example is the face of Jeanette MacDonald. She has a fine, oval face. Very little rouge is used in her make-up, and that is brushed along her cheekbones horizontally. This avoids producing a lengthening effect which would result if the rouge shadow added a vertical line in the curve of her cheek."

Dawn added that a costume with a white yoke often reflects so much light under an actress' chin that the camera does not record the actual shadow, and a double chin may appear which is not there at all.

Properties or parts of settings sometimes create reflections which do strange tricks inside the camera, and impair the planned effect of a make-up. Work stops until cures are found. A dress may need to be remade, or reflections from furniture or mirrors ended by rubbing putty over the offending object.

The most popular feminine screen stars use less than half the make-up for street wear that the average girl or woman does. Norma Shearer contents herself with a dab of lipstick. Joan Crawford uses a bit of powder and very little rouge. The star soon learns the danger of too much make-up, except in deliberate application for a specific character effect.

Hair is a most important commodity in any studio make-up department. Two costume pictures, *Maytime* and *Parnell*, in which many hirsute characters took part, required the use of much hair. Some wag has said that the make-up department of the studio had "hair enough to put a beard on the man in the moon; hair enough to make a mattress for an elephant."

Wigs and beards require artistry in handling. The artist must study the way the hair lies on the skin of his subject, and then carefully set in his strands to follow these specific curves and dips. A good artificial beard cannot be distinguished from the natural, even in the most severe close-up, but a beard badly applied will betray itself if a few strands run in false directions.

Wigs are fragile and for screen plays in which many are used, a wig repair man is at hand. Wigmaking is a separate craft. Most make-up men can make a good wig in an emergency, but normally the best wigs are created by men and women who do nothing else. As in the placing of a beard on the face, the expression of art in a wig is the placing of the strands of hair into the meshes of the wig cloth so that they lie exactly as would real hair.

To make-up experts the items on their daily order sheets are simple routine. The following is no unusual excerpt from such orders: "Make-up for tomorrow: two Chinese fan-tan dealers; six policemen with handlebar mustaches, vintage of 1902; a Filipino murderer; an old woman with one eye. . . ." Make-up is an essential tile among the hundreds combined into our motion picture mosaic.

With no intention to seem derogatory in any sense to the operators of a beauty shop, we remind our readers that there should be no confusion between the workers in a commercial beauty shop and a skilled film studio make-up artist. The beauty shop operator need only enhance beauty already present, or distract attention from facial faults. The make-up artist must know sculpture. In fact one of the leaders of this new profession was a sculptor of reputation for years.

The make-up man must have the equivalent of a college postgraduate's knowledge of chemistry, for with special formulas he literally molds a new face over that of an actor. He must know as much about lighting and photography as a cameraman, for if he mistakes the

photographic effect of any one make-up, hours of labor will be lost.

Motion picture make-up is so tied in with studio requirements that a make-up artist serves an apprenticeship for several years before he is allowed to work on important assignments. Studio make-up departments are recruited from the most imaginative employees of beauty shops, and from research workers in factories manufacturing cosmetics. The studio make-up leaders of today, however, are either actors who became interested in the art from personal experiments, or former painters or sculptors.

The art of the screen has advanced greatly in the past decade, but it has been able to advance no faster than the art of make-up. In arts such as that of the screen play, or the stage play, there are few contributing artists whose contributions rank in importance to that of the studio make-up expert. *The Good Earth*, with its changing of American faces into Chinese, is only one of a number of pictures which could not have been made ten years ago when make-up men were less expert.

16

THE DIRECTOR

No MEN doing the same work vary so greatly in temperament and methods as motion picture directors. They all seek the same goal, a story translated to the screen in a manner which is realistic, appealing, and human, but the roads they take toward this goal are widely different. Each one is distinctly individual in his methods. One will make a great success using methods exactly opposite to those of a fellow director on a neighboring stage, who will also turn out successful photoplays. Some direct with speed and, after one rehearsal, impatiently call, "Camera!" the traditional signal to begin photography. Some are slow and methodical, rehearsing many times. Some are mural painters, making their photographed effects with broad sweeping strokes. Others paint miniatures, spending hours to get the exact expression they want on a player's face.

Many are specialists who do one kind of thing well, and never vary from that field. Others set no limits to their directorial ambition, except that the story they handle be strong and worth while. Some directors do their best work with men; others get more emotional response from women.

However different they may be individually, all

directors meet on one common ground. They all are specially and acutely sensitive to the drama of life, for they all have the same central hobby, an enthusiastic, abiding interest in people. A good director cannot be a grouch or a recluse. He must have an insatiable love for, and interest in, his own kind. And every director, whether he will admit it or not, is a practicing psychologist.

The principal tools with which a director works are men and women. A director is judged by the logic and accuracy with which he fits actors and actresses into the parts and the plot of a fictitious story. It is here that individuality of the director becomes most evident. Each director will have different methods of getting the ultimate in emotional reaction from the cast of his picture.

One director will be very brusque and businesslike. Another will patiently explain each scene quietly and in great detail. W. S. Van Dyke is an example of the first school, Sidney Franklin of the second. Sidney Franklin, unconsciously, is an extremist in his method. He speaks in such an abnormally low, quiet voice that his players find themselves giving unusual concentration to every word he says.

The director must know his story so thoroughly that he senses the exact moment when actors should be subdued or their actions intensified. Actors depend on directors to give them the necessary connection between scenes. If a player, worried about tempo, the distraction would interfere with his creation of a perfect individual scene. It is the director's responsibility to be certain

that each scene joins smoothly with the previous scene.

Directors come from many vocations. Clarence Brown was an automobile engineer; Sam Wood, a real estate salesman; George Cukor, a stage director; Frank Capra, an engineer; Gregory La Cava, a cartoonist; Mitchell Leisen, an architect; William K. Howard, a salesman. The overwhelming majority, however, were actors. D. W. Griffith, Cecil B. DeMille, Robert Z. Leonard, Jack Conway, Harry Beaumont, Charles Brabin, the late Richard Boleslawski, and W. S. Van Dyke were all actors originally.

Just below actors in point of numbers are ex-cameramen and ex-assistant directors. Ex-cameramen include Mervyn LeRoy, Victor Fleming, and Sidney Franklin. Humberstone and Taggart are named among those who rose from the post of assistant director.

Directors are master salesmen. They convince the players by various psychological methods that their interpretation of the emotion required for a particular scene is correct. Some stars respond better when handled by certain directors than by others. For this reason a star will often have the same director for four or five consecutive pictures.

New players of apparent potentialities but comparatively little actual creative experience place the heaviest strain on a director's ability.

Cecil B. DeMille once cast a beautiful unknown girl to play the lead in an important picture. The girl had no professional experience except brief employment in a small stock company. She had a beautiful face, an even, sunny disposition, and a lovely smile.

But for the first week of the picture the last two assets seemed destined to turn into liabilities. Life had been so pleasant, success had come so easily, that the young actress could do little else but smile.

But the picture called upon her to be the center of a very tragic situation. DeMille talked and explained, but the actress only smiled, and her tragic scenes were wooden and unconvincing. It seemed impossible to break the psychological barrier which kept back the deeper emotions of the girl. It was obvious from her vitality and her abounding health that those emotions were present in her soul. How could they be brought to the surface?

DeMille, as a last resort, determined to use harsh methods. He called the girl and her brother to his office. The invitation to the brother was deliberate. People are much more sensitive to a psychological slap in the face if a member of the family is present.

Brusquely, he told the girl she was discharged, that he was putting another actress in her place. In an instant the psychological barrier melted. She fell on her knees by DeMille's chair. She wept. She told him that his action would ruin her professional career.

DeMille picked up a hand mirror which he had placed conveniently on his desk. Handing it to her, he said, "Now look at yourself. See how relaxed you are. See the muscles in your face. At last you have released your deeper emotions. Look at yourself again; then look at these pictures."

He handed her photographs of herself in scenes from the photoplay.

The actress stood up. "I see what you mean," she said. "I can do it now."

Realizing then the emotional reactions required of her, she was magnificent in her final attempt at the scenes in which she had formerly failed. Those scenes raised her to stardom, and during her career on the screen she was an acknowledged leader in flawless emotional acting. In such methods of lifting a player to higher, greater interpretative levels, one finds one of the many valuable contributions of the director.

The unit manager is responsible for the business details of a production, but he is seldom on the set. He keeps ahead of the director by inspecting sets in process, spacing them so that they are ready when needed. This prevents waste in stage space. He arranges transportation of food, supplies, and personnel. He makes certain that actors working in other productions will be ready for a call to his picture on specific days. He works closely with the assistant director and usually he has been one.

On the other hand, the assistant director seldom leaves the set. He is by the side of the director every minute of a working day. He is always the first to appear in the studio, the last to leave. When large crowds must be sent "on location," he may arrive at the studio at 4:00 A. M. and finish his work at midnight.

Weeks before a picture starts he, in collaboration with the unit manager, "breaks down" a scenario into its special requirements for wardrobe, actors, both principals and minor players, settings, properties, make-up, lighting, cameras, sound equipment, and locations.

Every activity is scheduled by days. Production time may vary in length from twenty days to several months. In a large studio the unit managers and unit assistant directors report daily to the studio production manager. He balances all the requirements of all working companies against the available studio space and facilities, and allots these accordingly.

The assistant director prepares the "3:00 o'clock call." This will specify the types, if minor players, and the costumes. If the call is for an outdoor setting, and the weather is cloudy, a second and "alternate" call will be posted specifying work on an inside set. His "chart" indicates to the director, and to all the cast and technicians, which players will appear on specific sets on specific days. It also gives a cue for wardrobe and make-up. The 3 o'clock call is filed with the casting office at 3:00 P. M. of the day before it becomes effective.

The assistant director directs the "background action" of big scenes. Suppose the leading lady and leading man are having an argument on the curbstone of a busy street intersection. If the street were empty, the scene would be absurdly ineffective. It would lack atmosphere.

But if other people are to be on the street, they must act in an acceptable manner without interfering with the work of the principals. Assistant directors of such a scene give silent cues to previously rehearsed players, taxi drivers, messenger boys, and truck drivers so that they may come casually and naturally into the scene from different directions.

Assistant directors and unit managers train themselves to be calm. They are so accustomed to strange, immediate demands that they accept them as routine. If a director suddenly would say, "I must have Siamese twins on the set at 9:00 A. M. tomorrow," without a flicker of an eyelash a trained assistant would go to a telephone. At the appointed time the twins would be on hand.

And these men are trained to prepare against any possible contingency. If a girl is required to run down a flight of stairs it is customary to order two or three duplicate gowns for her. Actresses have fallen under such circumstances and ripped their clothes. Delays caused by accidents of this kind would cost many times the price of a second gown.

Newspapers once ridiculed a certain unit manager who had been seen loading several huge boxes of cornflakes to be used as "snow" in the Arctic. But the unit manager had studied Arctic weather charts, and he knew that freak weather occasionally keeps snow out of the skies and off the ground for weeks, even at the Arctic Circle. Had the company been delayed by lack of snow, a loss of thousands of dollars would have resulted.

On location, unit manager and assistant director become hotel managers. Complaints about food and housing come to them. Tact and diplomacy are prerequisite qualities of these men. No one who has the desire to work only eight hours a day should aspire to their positions. They are the hardest jobs in the film catalogue. But they are the most satisfying to an ambitious

man. They both provide perfect training for positions either as director or associate producer.

So valuable is an assistant director to a director that the two usually work in "double harness." A director will often have the same assistant for years. They grow so attuned to each other that sometimes incidents arise which suggest mental telepathy.

This dialogue actually occurred between a director and an assistant director:

Director: "I decided last night we would use a Chippendale dining set instead of the one I looked at yesterday."

Assistant: "It's here."

Director: "I also decided that it would be better to have a Japanese houseboy than that colored maid."

Assistant: "He's on the set and made up."

These three men, the director, the unit manager, and the assistant director, are the channel through which most of the money flows into the making of a picture. It has been stated earlier that preparation of a picture requires one half of the total time; photography one sixth; and completion one third.

But in the direction and photographic third occurs the major portion of the expense. Here costly settings, gowns, properties and well-paid actors and technicians are concentrated. False judgment can cause heavy financial loss at this point. To avoid this, and to get the finest dramatic and emotional effects for the least expenditure, is the joint problem of the director and his two immediate associates.

No one shares the burden, however, for artistic quality. That belongs to the director alone. It cannot be emphasized too strongly that while all the arts needed to make a photoplay do not come under the control of the director, he is responsible for the smooth laying of more tiles in our finished film mosaic than any other film artisan. His importance in the film making structure cannot be overestimated.

17

THE STAGE IS SET

THE PRELIMINARY preparations have been made. The first sets have been erected on a stage and are ready for actual production. The cameraman, the property man, the electrician, the sound engineer, and others have been preparing for the period of production in the same manner as the scenario writer, the director, the stars, the casting director, the art director, and the make-up expert.

There is a great difference between the stages of today's talking picture era and those of the silent period of the cinema prior to 1927. Basically, stages are barn-like structures varying from one hundred to three hundred feet in length, and from fifty to a hundred feet in width. In exterior height they vary between forty and one hundred and ten feet.

Externally, today they are made of stucco and cement which keep out sound. They are solid and substantial in appearance. In the days of silent pictures they were light wood or steel frame structures, the latter having either canvas or glass side walls. In the silent picture era it made no difference whether doors were open or shut. In summer, side walls were raised and the actors worked in the full view of those employed on the studio property.

The China Seas—in Hollywood

Jeanette MacDonald in screen adaptation of *The Firefly*.
Director Robert Z. Leonard at center.

Illuminating engineer inspects electric switchboard of studio using 600,000 kw. hours a month

Today the walls are solid. The structure has the appearance of a bleak, windowless jail. Its interior is protected against external sound by two heavy "ice-box" doors, with a small waiting space within. This is provided so that a person entering the outer door after the warning red light of a "live" stage flashes, can remain in the provided space until the stage is again "dead." He never enters the second door to the actual interior while a scene is being photographed.

"Shooting" on the stage has stopped us in the waiting space. But shooting is now over. Door number two opens and we are beckoned to the stage. We blink our eyes in semidarkness. Far above us are shadowy platforms along which electricians may move, adjusting overhead lighting. Overhead are the tracks of lightweight cranes used to carry heavy equipment.

The scene may be of a telephone booth in a far corner of this big structure, or a reproduction of the British House of Commons, crowding every inch to the doorway.

The walls are padded with a chemical wool which absorbs sound, but does not reflect it. It takes a great deal of voice volume to call across a stage. In your homes and offices you are accustomed to the aid given you by the bounce of your voice against hard walls and windows. There cannot be a bounce of this kind on a sound stage. In your home you have two ears to separate the direct sound from the bounce. But in sound recording, at present, the recording system has but one "ear" and cannot do this.

We see a long metal pole which looks, despite its

gadgets, exactly like an old-fashioned well sweep. At the end of the pole there is a round object about the size of a cannon ball used in 1860. The "well sweep" is a "microphone boom." The cannon ball is the microphone. The sweep permits the microphone to follow a player as he stands up or sits down, walks to the right, left, straight ahead, backs up, or climbs a stairway.

The microphone is centered with a disk slightly larger than a silver dollar. This is the entrance to the interior of the microphone. Just inside is a diaphragm, not unlike that in the mouthpiece of a telephone. The voice sets up a vibration in this diaphragm, exactly as with the telephone, which in turn sets up a varying oscillation of electrical current impulses. If the scene is made on location, these impulses are carried over a wire to a portable recording machine. Usually, they are carried to a permanent apparatus in a building which may be adjacent to the stage, or some distance from it.

Formerly, the microphone was long and slim, like a thermos bottle, with a separate protuberance at the bottom for the diaphragm. Later it was made round because the slim form and separate diaphragm caused malformations of the sound waves as they went over its uneven surface. These malformed waves were part of annoying "ground noises" in early sound reproduction.

The stage is padded to prevent malformations of sound in larger and more vicious forms. Its special acoustics bring the voice to the microphone, but very little farther. Sound recording must not be complicated by sounds reflecting at different angles from furniture or five or six different wall surfaces.

The present round microphone form allows the sound waves to pass smoothly around the microphone as air passes smoothly around a modern airplane wing, and distorting air bubbles are thus reduced. Perfect sound waves are spherical, just as the circles which spread out when a stone is tossed into a pool are circular. Two men control the microphone. One, the "boom man," operates the boom, moves it to follow the players as they move through a scene.

The company recording engineer may be high above the set in a sound-proof booth with double glass windows put in a side of the upper part of the stage, or in a portable, equally sound-proof booth placed just off the set itself. Or he may wear head telephone receivers.

In all instances his equipment is the same. His fingers are on several dials, not unlike those of a radio, which regulate the volume of sound delivered to the recording machines. His eyes watch a dial on which a needle flickers quickly, showing how much recording current the voices of the actors are generating. With his loud-speaker or headset he listens to what is being said to the microphone on the set in front of him. As the sound is delivered to his ears, his fingers on the dials raise or lower the volume at his trained discretion.

In front of us is a strange appearing device called the "rotumbulator." This is a camera platform so constructed that in a second it can run noiselessly to the top of a heavy eight-foot post. On its moving circular base it can move up and down and sideways. The whole structure is on rubber wheels and one man can move it noiselessly backward or forward on special aluminum

rails, a score or hundreds of feet if needed. When moved in this manner, the effect achieved is called a "trucking shot." When the camera moves in a quarter or half circle sideways on its own stationary axis, its action is referred to as "panning."

Another form of camera platform is the "boom." The boom is of duralumin, or very light steel, and, when horizontal, extends forward some twenty odd feet from a rear weighted base. For "shots" following persons up a stairway or climbing a tree, it can shoot its full length almost directly upward and swing in a complete circle. There is also a smaller boom which duplicates the work of the rotumbulator.

The head cinematographer, or director of photography, never physically touches the camera, except to satisfy himself anent pictorial composition adjustments. He stands near it, usually in discussion with the "gaffer" or head electrician. The "gaffer" may have under him six or a hundred electricians, depending on the lighting required.

At the request of the cameraman the gaffer gives orders, "Kill that spot," meaning turn off the spotlight; "Give me that rifle right over here," meaning turn the beam of that special focused light on this or that player; or "Silk that broad," meaning put a wood frame covered with light gray silk over that "broad," or type of floor lamp, in order to cut down its illumination. By these and other instructions, couched in equally vivid and exclusive slang, the illumination of the scene proceeds until it completely satisfies the trained eye of the head cinematographer.

The head cinematographer has at least two assistants. The operative cameraman sits on a tiny folding seat which is fastened to the post of the rotumbulator. He seldom leaves this seat while the scene is being lighted or photographed. He checks the focus and makes lens adjustments at the order of the head cinematographer.

The lesser assistant in importance keeps the camera clean, carefully polishes the lenses, of which there are from five to nine in an outfit. He also sees that the "filters" used to intensify one special spectrum color value, and the "optical disks" and "gauzes" (to dim the outlines of a scene for a specific dramatic purpose) are in order.

When a scene is completed he walks before the camera with a blackboard called a "slate." This bears the name of the picture, the cameraman, and the number of the scene as listed in the scenario, and the number of the "take." It serves as a guide when the film is developed in the laboratory and in the first processes of "cutting" or editing.

The advance in photography has been very great in the last decade. Lenses and films are 50 per cent faster and scenes can be photographed with 50 per cent less artificial illumination.

Several men in more or less clean overalls may be seen rushing around moving portions of sets and furniture; moving the rotumbulator when needed; performing a great deal of valuable semiskilled labor. These men are the "grips."

A good grip is much esteemed by a director. He knows the physical side of work on a set so well

that he performs a prodigious amount of constructive labor in a day with great efficiency. Normally a grip is very graceful in his physical movements. He has to be. A grip needs physical size, it is true, but an awkward, large man could be a veritable bull in a china shop, overturning rare vases, scratching priceless antiques, and in general being more troublesome than valuable.

Just out of sight of the set, a man is busy scrambling eggs on a gas plate. He is a property man giving a final touch to food which will be immediately required on the scene. Another property man is placing a vase of roses on a table. The roses are too long, so he goes to his "prop box," a portable case about six feet high which moves on rollers. He takes out a pair of scissors and clips the stems of the roses.

But scissors are only one item in this "Pandora's Box." In it are the immediate "hand props" which may be needed in the current scene: the mortgage on the old family place, a Bible, a fountain pen, calling cards (printed in advance with the character's cast name), and a host of other articles. It also has a large standard inventory. This inventory is planned to reduce delays which might be caused by unexpected emergencies. How this box can be a protection against emergencies is obvious when one reads the list of the contents.

It includes pens, pencils, paper, aspirin, pins, bandages, cigars, cigarettes, hammers, nails, tacks, mucilage, paste, eyewash, mouth wash, chemical "blood," fuller's earth (for the dramatic soiling of clothes), picture hangers, absorbent cotton, stamps, furniture polish, silver polish,

nail polish, nail files, razors, razor blades (more often used for cutting film tests than the star's beard!), thread (ten kinds, colors, sizes), needles, darning cotton, headache powders, collodion, coffee, tea, rouge, cold cream, lipstick, copper wire, picture wire, drinking glasses, cups, and almost anything else which may be requested.

The property man is the company representative from a huge four-story building with an inventory of three hundred and fifty thousand articles. He goes to headquarters night and morning for special properties.

A trained interior decorator carefully adjusts window curtains. Under the orders of the art director she has selected and arranged the furniture, either antique or modern, and completed the set with curtains, pictures, hangings, vases, china, and silver.

The woman in a white uniform is the studio nurse. She is on call in the studio hospital for actual professional services, and she gives technical advice about any scene concerned with hospitals, nursing, or medicine.

The assistant director controls the physical assembling of all this detail. Close by the chair of the director is a young man with an open copy of the scenario and a poised pencil. He is the set secretary. As interior and exterior scenes are sometimes photographed weeks apart, it is his job to see that an actor wearing a black hat and carrying gloves does not step to a closed doorway and later enter the room with a gray hat and no gloves. Under this secretary system such errors are today almost impossible. The secretary keeps careful notes on each scene, even to the size and number of the dots in the leading man's tie.

A middle-aged woman whose needle-pricked hands betray her profession, stands in readiness. She is from the wardrobe. She will save a great deal of time during the day by adjusting flounces and pressing wrinkled materials, or making quick repairs if a dress should be torn.

When the stars arrive, make-up experts and hairdressers accompany them. In a scene full of action, make-up suffers. The deft, quick touches of a waiting expert again save time.

Everything is prepared for the presence of the actors. The boom man stops adjusting the microphone. He steps before it, calls, "One, two, three, four, five, six, seven, eleven, sixty-six!" The emphasis on the letter *s* is to test the ability of the sound recording system to record satisfactorily consonants with hissing sounds or sibilants.

Through a loud-speaker a hollow voice calls, sounding very odd and different in the echoless room, "O.K. for sound." The company sound engineer, or "monitor," or "mixer," has declared the delicate apparatus he controls ready for the day. The operative cameraman makes his final physical adjustments.

We stated that the "camera" is fastened to a platform of the rotumbulator. Over the camera is attached its "blimp" or "bungalow." The cast-aluminum blimp or camera cover fastens over the camera when it is in action and makes it sound tight. This is necessary, for as yet no fully effective method of silencing a motion picture camera has been discovered.

The "clicking" noise one hears is integral to motion

photography. This is because, as Edison learned, motion pictures really do not move steadily. They "stop and go." Were the film to travel back of the camera lens in a continuous ribbon, it would record nothing but a blur. What really happens is that a ratchet effect pulls one section of film, or "frame," back of the lens. It halts there for a fraction of a second to release the film, and then pulls another and repeats the process until it is stopped. A completed photoplay is a succession of thousands of individual small photographs, which through an optical illusion, explained by the Law of Persistence of Vision, gives the effect of movement.

It must be nearly time for the stars and the director to come on the set. The property man is cutting cigarettes into different lengths. This chore will save him time later, for, if his leading man smokes during a scene, progressively shorter cigarettes are needed to show the time lapse. A scene which is shown with all its close-ups, long-shots, and medium-shots in five or ten minutes on the screen may have taken three days to make.

The big inner ice-box door is opening. The players and the director enter. In a moment rehearsals will start. In half an hour the first scene will be taken. Technical workers are busily engaged in from twenty to thirty different activities, and their separate contributions rapidly begin to come to a focus. To the assistant director the head cameraman has reported "Ready!" To the cameraman has come word from his head electrician that every light is in its proper place, and competently manned. The assistant director sees that the stars and featured players are all in their portable dressing rooms,

and in the hands of hairdressers and make-up experts. Gowns and other costumes have been brought on the set from the wardrobe. It is in these last few minutes of preparation that one senses still further the remarkable technique of co-operation between different technical elements which is the basis of modern efficient motion picture production.

18

"LIGHTS! CAMERA!"

The set is ready. All technicians are at their posts. For a final adjustment of wardrobe and make-up, the stars scatter to their portable dressing rooms which are approximately eight feet square and have in them make-up tables, proper lights, and couches for rest between scenes.

The director confers with his assistant, who checks the details of the day with his chief. The assistant has already placed the cameras in the position indicated by the director the night before. "Stand-ins," minor players who in size and coloration resemble the stars, have been before the hot lights for at least half an hour. The cinematographer has completed the illumination for the first scene. If the scene is a hotel lobby and requires a crowd of forty bellboys, maids, guests, and clerks, the assistant has already rehearsed his "background action," the natural movements customary in such a setting.

The director, satisfied that everything is in readiness, glances over his notes. Most directors make notes on cards, envelopes, or sheets of paper. Some keep all their plans in their minds. But if notes are made, they indicate clearly the director's personality.

One man, highly methodical, makes a neat chart that

looks like a graph of a football game. Others dictate to a stenographer immediately before coming on the set, and they refer frequently to their carefully typed notes. Others depend on a few scribbled remarks made while riding to the studio. The methods to be used are the director's own problem. Although he has much work to do in a day, no one else can do it but himself, for he alone is responsible for results.

There are no rules for a director's personal preparations. But somehow he usually has available the results of hours of study made the night before. Sitting down alone with his script, he plotted out his day's actions, entrances, exits, and "business." This last comprises gestures, movements, and significant handling of properties like papers, guns, or bottles, which may advance the dramatic action.

The stand-ins step out and thankfully relax into chairs. The players are called before the camera and rehearsal begins. Rehearsals may last only a few minutes or they may extend for days. Their length depends entirely upon the emotional importance and physical size of the scene. It took days to rehearse fifty men in the scene in which Parnell was dismissed as head of the Irish party. A scene of a man putting a nickel in a dial telephone could be filmed within twenty minutes.

Length of rehearsal varies with directors. Some get their best results with multiple rehearsals. Others "run through the lines" once. Then, if the memories of the players are not at fault, photography is ordered. Technical interruptions during a rehearsal are frequent.

The mixer, stationed in his booth, is listening to the

voices as they come to him through the microphone. He may say, "Miss Colbert will have to be just a little louder on that last sentence, Mr. Lloyd. She moves away from the microphone faster than we can follow, and her voice dies."

During these proceedings, the cameraman is scurrying here and there. He has completed his lighting preparation with stand-ins so that no more heavy moving of lights is necessary. But now, with the stars on the set, he perfects the job. By voiceless pantomime, in order not to interrupt the rehearsal, he signals electricians "up high" to give more "backlight" on the red hair of Jeanette MacDonald or to outline the broad shoulders of Nelson Eddy with a spotlight's beam.

The director is satisfied. He calls, "We'll take it!"

All required lights are switched on. Because lights create heat, rehearsal is usually done with about one quarter illumination.

The property man takes a last look at a still picture which was taken on the same set at the conclusion of work the night before. He assures himself that all the furniture and "hand props" are in their proper places; that Mother has her sewing basket and Father his cigar, which has been burned to the right length for the time element involved.

The assistant director glances about to see that all the actors required are properly made up, in their places, and ready for action.

The operative cameraman adjusts his lenses finally and swings shut the soundproof covers of his "blimp." His chief, the head cinematographer, takes one last look

at his lighting through a "blue glass," which resolves all colors into their eventual black and white photographic values. Using it, a trained cameraman can know approximately the appearance of the scene when the film is developed, printed, and projected.

The boom man stands ready to swing the microphone down, up, to the right, to the left, or straight ahead, following the action of the scene as the players have already rehearsed it.

The director calls, "Ready! Everybody quiet!" The sound engineer presses one button. Some distance away, in the central recording building, ten cams, or small metal wheels, turn over in a small box. These wheels have breaks in their surface so that as they turn in consecutive order they will make electrical contacts which will set various different pieces of machinery into action. Automatically the electrical contact broken by cam number one cuts off the stage telephone and insures absence of unexpected, extraneous sounds from that source.

Cam number two starts a combination system of a red light and an intermittent buzzer on the outside of the stage. Under pain of instant discharge, no studio employee may open the doors of a stage while this warning signal is in operation. Cam number three closes still another electrical circuit and starts the motors of the recording machines. Cam number four does a similar function for the motors of the camera. A fifth cam operates a tiny light within the camera. This flickers for a fraction of a second, and sensitizes the film with a foggy mark which, when developed, indicates the si-

multaneous start of sight and sound. Another cam does the same fogging action inside the recorder. It takes a few seconds for the speed of the recorder and the camera to be absolutely together.

Such synchronization is the essential principle of talking picture production. When this occurs a final cam turns, and a bell rings as the signal for the actual start of photography and recording.

The development of this automatic starting system is an example of the refinements which clever minds are steadily adding to the whole film production process. In the early days of talking pictures, various individuals on the set, the assistant cameraman, the assistant director and others gave the orders and made the motions which are now accomplished by electrical contacts set up by a few revolving metal wheels. Because of the necessity of co-ordinating several human voices and personalities, it sometimes took three or four minutes to accomplish what is now done in a few seconds. The new method insures absolute synchronization, and is much easier on the nervous systems of players and technicians.

The signal bell has sounded. The boom man calls, "Up to speed!" The director calls, "Camera!"

The scene is on. In all, only ten to twelve seconds have elapsed. Not a sound is heard except the voices of the players. The camera clicks busily in its blimp, but not a click emerges from the metal cover. The phone is disconnected. The stage doors cannot be opened. The director cannot say a word. His directions must be completed before the scene starts. In silent pictures he

directed as the scene proceeded, but in talking pictures, once the signal is given, the actor is entirely "on his own." Usually, unless it is a long shot establishing the action, a scene takes less than a minute. An ordinary talking picture contains about three hundred scenes. It is exceptional for a scene to last eight minutes.

The scene ends. The director calls, "Cut!"

"We'll take it again," he says. "You were just a trifle too slow at the start, Mr. Montgomery. This will affect the sincerity."

The cameraman swings the blimp open and takes a quick look at his camera to ascertain if he needs to reload his film magazine. The director turns toward the monitor's booth. That gentleman is holding his right thumb upward. "It's O.K. for sound," the players are told. If his thumb is down the scene is N.G. or no good, for some sound recording reason.

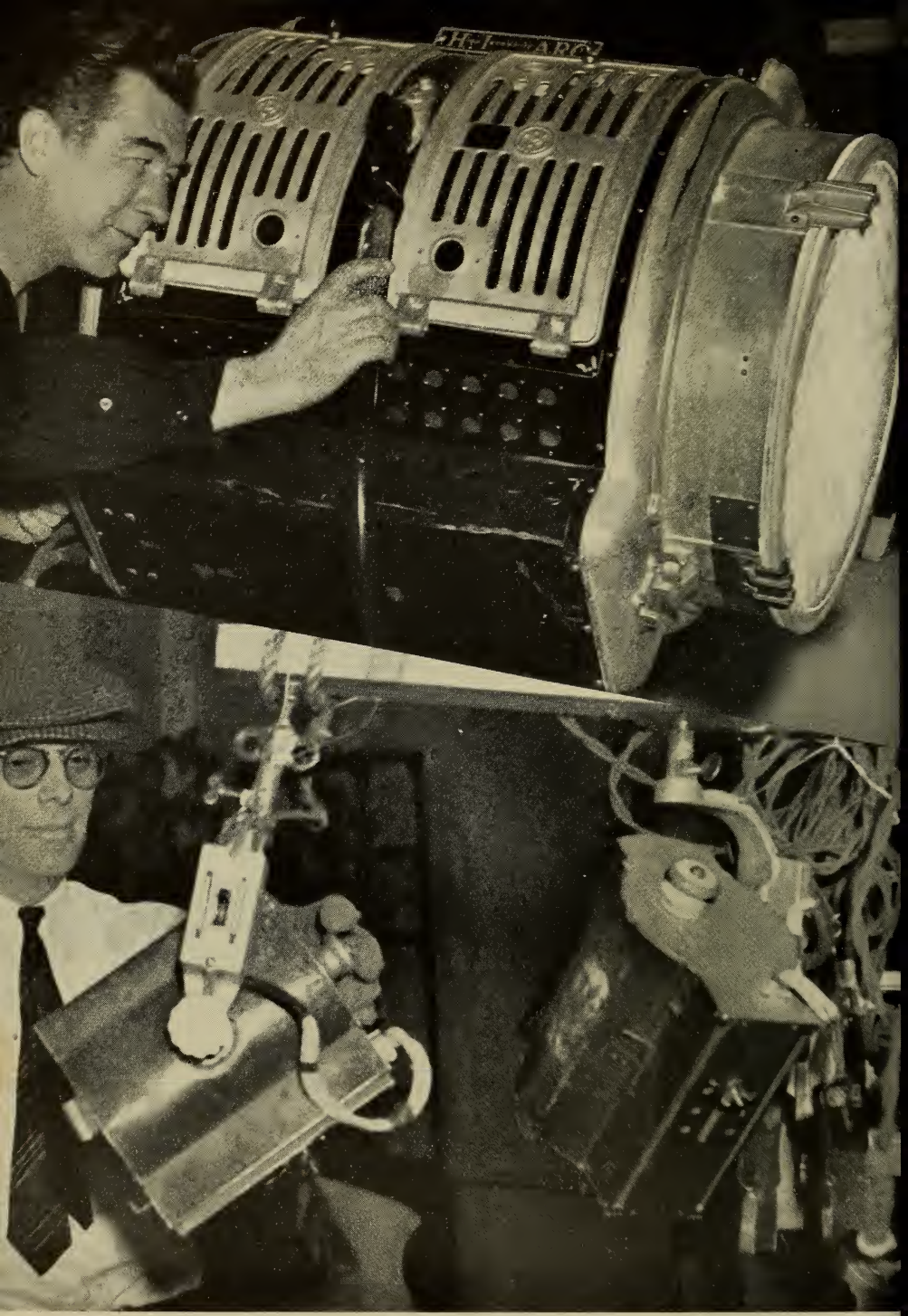
They scatter for quick "dabs" at their make-up. The blimp cover crashes down.

"All ready!" cries the assistant. The players take their places.

"Camera!" cries the director, and the scene is repeated.

Ordinarily a director tries for three perfect negatives, one with which to make prints in the United States, one for foreign use, and one for reserve. But to get these he may photograph the scene eight times or more. When a scene starts, there is no interruption except when a player "blows," or forgets his lines. Nothing annoys players more, for invariably they are proud of their ability to remember.

Sound engineer adjusts microphone at end of "Boom"
"Boom man" changes position of microphone during photographing



Electrician focusing a spotlight from above a set

A special arrangement of "baby" spotlights to give an artistic lighting effect

On a small scene there may be only one camera. On a big scene a dozen or more may be used to catch the action from different angles. Such multiple use of cameras is common for crowd effects like those shown in *Ben-Hur* and *The Big Parade*.

When the so-called "establishing" long-shot of the entire set, with all the players and action, is taken, the players are far from the end of this sequence. They are certain to be saying the same lines over and over, in close-ups and medium shots, for one, two, or perhaps several days.

These close-ups and "mediums" are "cut into" the long-shot when the picture is finally assembled. The close-up is probably one of the motion picture's five great assets. Its increased size of faces "points up" drama. The close-up is the factor that most definitely sets the technique of the photoplay apart from that of the stage play or the novel.

When on the set, life is hectic for the major players. After an hour or more of intense concentration, a star may have a few minutes away from the camera while close-ups are taken of his leading lady. But he may not rest. A tailor arrives to try a costume on him which will be used five days later. The scenario writer brings a revision of scenes which must be memorized before the next day. The publicity department asks for a photograph with a Siamese nobleman. An expert arrives to give the star ten minutes' instruction in handling an Australian bull-whip, which he must use in the picture.

The minor players have an easier time than the stars.

The less ambitious among them read, play bridge, or sew. Those who think of the future sit by the side of the director, intently studying every move made by the players, storing this information in their memories. Close attention to the difficult technique of screen acting has led unknowns to stardom.

The technicians engaged in making a motion picture are not always completely absorbed by the concentrated, serious business of their work. Many incidents have comic aspects. One tragicomic moment came on the first day of "shooting" *David Copperfield.*

Tests had been made of hundreds of young boys in every part of the United States, Canada, and Great Britain. One of all these, and one only, would be chosen to act the rôle of David Copperfield. Freddie Bartholemew came to Hollywood from England and his tests proved admirable. During the first day under actual camera conditions, the lad played his part as if he had acted for years. Director George Cukor could hardly contain his satisfaction.

Time was taken out for lunch. After lunch Freddie came to the director. "Look, Mr. Cukor!" he cried, and with great juvenile pride he showed a gap in the middle of his upper row of teeth. He had lost a tooth in a hard French roll!

The confusion can be imagined. Players were sent home. Cameramen were dismissed. Dentists were called who worked all of the following night to prepare a tiny tooth. Before nine the next morning, they arrived with it. But the company had lost a half day's work because a little boy had lost a tooth.

In this chapter we have sketched the general technical background of any and every scene taken within a studio. In all studios this technique is much the same, differing only in details. The physical settings and the players, however, differ from day to day. One day a stage may savor of Alaska, the next of Versailles; the next of the Kremlin in Moscow. This constant change to those within the industry constitutes a large part of its irresistible charm and appeal.

But not all settings of a talking picture are indoors, for, unlike the stage play, the photoplay may wander as it wishes. Every photoplay has some exteriors. Many of these can be photographed on the studio property, but others must be made outside. One picture may demand that a company go outside for only a day. The requirements of another may cause the company to leave the studio for weeks, even months.

Interior work in the studio, and exteriors "on location," are integral parts of the same picture making process. They differ, however, quite widely in their methods, in the mechanisms used. Because the work within the studio is so much more complicated, requiring so many more different elements, it has been discussed first.

19

"GOING ON LOCATION"

LOCATION refers to any motion picture setting, built or merely scenic, which requires a director to move his stars, cameras, sound equipment, and properties outside the gates of the studios. It does not include all outdoor settings. Many of the greatest outdoor scenes ever photographed have been made within the actual studio enclosure. Space for outdoor settings varies within studios from thirty to several hundred acres.

Great exterior settings built entirely within studio fences include the Casino at Monte Carlo and its flanking buildings (*Blind Husbands*); the Cathedral of Notre Dame and its plaza (*Hunchback of Notre Dame*); the Garden of Gethsemane (*Sign of the Cross*); the plaza of Verona (*Romeo and Juliet*); the Bastille (*A Tale of Two Cities*); colonial New Orleans (*Naughty Marietta*); and the exact-to-scale-size courtyard of San Quentin Prison (*The Big House*).

When exterior settings, with all due regard for the illusion desired, can effectively be built within the studio, a great deal of time and work is saved. But when a profusion of trees and vegetation, or natural landscapes, or specialized backgrounds not easily duplicated, are an essential to authenticity, it is necessary to leave the studio and go to proper spots providing the

pictorial effect desired. In studio vernacular, this is called "going on location."

Locations vary in distance from the studios. From one studio it is a ride of only four blocks to a great producing oil field. But thousands upon thousands of miles were traveled to Africa and the Arctic by those players and technicians who went "on location" to make, respectively, *Trader Horn* and *Eskimo*.

The selection of locations is in the hands of an expert, the "location director." In his office one finds several steel files. In these files are about five thousand cards containing data on possible locations, 80 per cent of which are within two hundred miles of the studios.

The variety of exteriors which are easily reached in Southern California makes it a particularly advantageous place in which to base motion picture studios. It offers within forty miles the Pacific Ocean and the towering Sierra Madre Mountains. Immediately to the east of those mountains one finds the up-torn desolation of Death Valley, the desert sand dunes in the region of Yuma, Arizona, and the fertility of Imperial Valley.

From snowy peaks to a swim in front of a South Sea shack erected at the ocean's edge is a matter of less than three hours' driving time. In between, and just beyond, one finds rolling hills and flat country which may duplicate any geographical section in all the world. Only two or three hundred miles to the north and within a small radius there are extraordinary scenic wonders such as glacier-carved Yosemite National Park and the big trees of the Sequoia National Park. A few hundred miles due east is the Grand Canyon.

The location director keeps his five thousand cards very carefully cross-indexed. Attached to each card are pictures giving several views of the location. A survey of the cards used at the various studios reveals the following information required for the adequate handling of a location department:

The owner's name; the amount of the rental; the distance from main highways, from piped water systems, and from electric lighting or power lines; the condition of roads leading to the location; its proximity to good hotels; the potentialities of the terrain for the establishing of a camp; the number and location of telephones, or distance from the nearest telephone line; the distance from the nearest grocery store, drugstore, doctor, and hospital; the time the sun rises and sets and in what direction it passes overhead in relation to the possible location of a contemplated setting; the time of high and low tides (if a seashore location); the location and number of sanitary conveniences.

These cards are altered regularly to fit changing conditions. Once a very lovely rocky beach seventy miles from the studios was popular for attractive sea scenes. There bold pirates landed with their loot. There, with the spray of rock-churned waves as a background, leading men made photographed love to hundreds of screen beauties. Since talkies were invented this beach has been abandoned, for, while its beauty is untouched, a broad motor highway, recently completed, parallels the ocean within one block. Noise from passing automobiles makes its use as a setting virtually impossible.

Perhaps the most frequently used single place in the

world, cinematically speaking, is an old Spanish ranch fifty miles north of Hollywood. Covering thousands of acres, it provides an incredible number of different vistas. A tangled acreage of hundred-year old oak trees is appropriately named "Sherwood Forest" after the famous English forest it resembles. *The Three Musketeers*, with Douglas Fairbanks, was one of the first of the hundreds of pictures to take advantage of its special values.

Not far away is a lake, flanked on one side by other forest land. It resembles lakes in the heart of Africa and, because of this, lions have roamed its shores; hippopotami and elephants have swum in its waters. Still another section of the ranch offers a lovely little stream meandering through gentle, rolling hills. Like southern England in every respect, it has been the setting for many British fox hunts.

Hills are hills the world over and therefore one hilly ranch with a few trees may serve for several radically different locations. With a dozen straggling buildings erected in its valley, one ranch was an exact reproduction of the cattle town of Lincoln, New Mexico, scene of the battle between two factions which was a highlight in the tumultuous cinematic career of the bad man, "Billy, the Kid."

Then for two years the same ranch became actually a segment of the Hopei province in China. Chinese farmers by the score, provided with primitive water wheels brought from China and working only with Chinese tools, cultivated eight hundred acres to a terraced height of three hundred feet.

It was mentioned that a certain beach can no longer

be used for locations because of a motor road. Likewise, the old Spanish Providencia Ranch, two miles from the nearest studio and only twelve from the farthest, provided scenes in *The Covered Wagon*, *Blood and Sand*, and many other old pictures. It is seldom used today for transcontinental airplanes pass over it.

Sandy dunes like those of the Sahara Desert may be found in several places, near Oxnard and Barstow, California, near Yuma, Arizona, and two hundred miles north, at Guadalupe, California. In Guadalupe, where the sand piles in great hills over an area ten miles long and six miles wide, was placed fifteen years ago what still remains the "record" location of all times. For two weeks, at an average cost of forty thousand dollars a day, twenty-five hundred men and women and three thousand animals were encamped, working before a towering reproduction of Rameses, an ancient Egyptian city, for scenes in *The Ten Commandments*.

Catalina Island, twenty-eight miles off the coast, has doubled for the South Seas innumerable times. One of its blue coves has played the part of the Sea of Galilee. Beautiful willow trees around a city reservoir, high in the hills, make it ideal for eastern park scenes.

One town, near San Francisco, does a good business doubling for New England. Producers willingly travel four hundred miles to reach it, because it is one of the few spots in all California which does not have palm, orange, lemon, banana, or eucalyptus trees. Originally built by a group of non-conforming Massachusetts farmers, anything savoring of California's native Spanish heritage has been kept from it.

The popularity of California as a place for the wealthy to retire makes it easy to find lovely homes of every conceivable kind of architecture. Spanish, Italian, Norman, French, British, and American schools are all represented.

This versatility in architectural style has been responsible for a unique charity. Years ago, certain women whose houses had been frequently in demand by motion picture companies conceived the idea of gathering all owners of pictorially attractive houses and gardens adjacent to Los Angeles, Pasadena, and Santa Barbara into what is now called the "Assistance League." The picture companies pay the usual rental for the use of these homes, but the owners give the money to the League for the support of worthy Los Angeles charities.

Camps are not established for locations which can be reached within a two hours' ride. On these, however, adequate comfort and make-up facilities are built and a hot noon meal supplied by a "chuck wagon" service. These chuck wagons, a de luxe version of the kind used for many years to feed cowboys on cattle round-ups, care for as many as one hundred people in hotel style. For large crowds, box lunches, prepared by organizations which do nothing else, are provided.

"Day locations" of this sort are not so popular with players and technicians as the more distant ones because of the very long hours they require. Sunshine is precious to cameramen. Players need to arise at five to catch the eight o'clock sun at a location fifty miles distant. They do not leave work until sundown, which in summertime brings them home at 8:00 P. M. or later.

Life on camp locations is also keyed to the hours of the sun, but, unless too long drawn out, is welcomed as a change from routine. Knowing that good food and relative comfort are prime requisites if camping workers are to remain happy and efficient, one organization has made a specialty of "movie camps." It can, on a twelve-hour notice, fill orders to establish a camp for a thousand men and women a hundred miles out on the desert, or a similar rendezvous on the top of a ten-thousand foot mountain peak.

Here they are provided with filet mignons, iced tea, and inner-spring mattresses. Motion picture people were not surprised when this competent company was awarded the immense catering and housing contract for Boulder Dam.

Requirements for a location on the Sahara-like sand dunes near Yuma, Arizona, 280 miles from Hollywood, illustrate the general location problems. The picture was *The Garden of Allah.*

The location being relatively small, some fifty tent cabins were built to house two hundred persons. Tents were equipped with hot and cold water, electricity, modern plumbing, and plain furnishings. A recreation hall, which contained a store supplying such personal items as razor blades and tooth paste, and needles and thread, provided a place for social diversion and likewise acted as a theatre where the director and staff could view the scenes photographed the previous day. A warehouse was also required for such construction items as one hundred and twenty-five thousand feet of lumber, thirty-five hundred adobe bricks, two hundred

and fifty sacks of plaster, sixty kegs of nails, and fifteen hundred yards of burlap.

Outdoor work develops its own specialists. One cameraman seldom shoots a scene on a studio stage, for his best work consists of filming sunsets, sunrises, and beautiful cloud effects. Another cameraman has become an Akeley expert. The Akeley camera looks like a cheese set on end and can move in any direction with twice the facility of its stage brother. An Akeley expert can follow, in close-up, by means of a long telescopic lens, an airplane in motion or a horse coming down the stretch in the Derby. This expert, too, is almost entirely used for work beyond the studio limits.

In similar manner, picture companies have traveled to every nook and corner of the United States and Canada. For westerns, companies have shot in Arizona, New Mexico, Montana, Oregon, Washington, Colorado, Idaho, and Wyoming. A company went twice to photograph the Dionne quintuplets at Callander, Ontario. The Mardi Gras at New Orleans has been the background for several pictures. One or more picture companies usually arrange to have players at the Kentucky Derby, working that spectacle into some photoplay.

The Army, Navy, and Marine Corps have been cooperative at various times, allowing photographing of their equipment, boats, and buildings when they were for specific stories. Permission to photograph any governmental equipment is only given by special arrangement which can be withdrawn at any time. The Government departments have the right to approve the manner in which the material is to be used in a picture.

The companies are also given to understand that each permission is individual and does not constitute a precedent.

In cases in which photographing close-ups on governmental property would entail a delay of actual operations, establishing "long shots" alone are taken, and then a portion of the boat or building concerned is built at the studio under the supervision of service experts. In this manner a portion of the landing deck of the aircraft carrier *Saratoga* was constructed at the studio for scenes in *Hell Divers*. For a submarine picture, *Hell Below*, permission was granted to film exteriors at Pearl Harbor, Hawaii. Interiors were built to exact scale at the studio.

Many times night work is required to take scenes in locations used for regular business during daylight hours. Department stores are cases in point. One large store has been used many times from 8:00 P. M. to 4:00 A. M. The agreement of the studio at such times is that all cameras and lights will be rubber shod to prevent injury to floors or showcases, and that any piece of store furniture or goods, used during the action will be replaced in perfect condition by the time the store opens in the morning. In like manner theatres are quite often used as locations from the close of the last show at midnight until noon the next day.

Very rarely is permission given to photograph in a prison or jail, but when a prison is to be photographed, prison heads act as technical advisors and sets are built to scale at the studios. An exact and imposing reproduction of the "Yard" at San Quentin Prison is still stand-

ing. It was built for *The Big House* and later used during the filming of *Criminal Code.*

From this discussion of locations within America it should not be thought that picture making is confined to our continental borders.

For scenes in dramatic photoplays, companies have gone from studios in London, Paris, Hollywood, Berlin, and Nice, to every corner of the globe. It is doubtful if anyone exceeds the travel record of W. S. Van Dyke. This director has covered over half a million miles during his career. First he made many Westerns in remote parts of the United States. Then he headed two extended foreign "locations." He was in Africa fourteen months with the thirty-five Hollywood technicians and players needed to make *Trader Horn,* and for a similar length of time he was above the Arctic Circle for *Eskimo,* with a staff of equal size.

For foreign locations there are endless complications of passports, interpreters, vaccinations, income tax clearances, local labor laws, transportation of food, the protecting of delicate films against excessive temperatures, dryness, or humidity, and various other difficulties. But Van Dyke contends that a location in darkest Africa, with all its complications, is preferable to one anywhere within Southern California, for there are few "movie fans" in darkest Africa! There he is able to work without interruption from a curious and investigating public.

Police protection is very essential to any picture making outside the walls of the studio. The news, "The movies are here," spreads rapidly over a countryside.

Once when Mary Pickford was taking scenes at a small railroad station near a main automobile highway, it took twenty motorcycle officers to handle traffic.

Careful attention to sanitary conditions is necessary in order to maintain the health of a company on location. The slightest carelessness may have serious consequences. At times work of actors and technicians has been seriously affected on location because someone failed to supply sufficient bottled water. It is a well-known medical fact that people when traveling are more disturbed by a change from their accustomed drinking water than from any other single cause.

Director W. S. Van Dyke gives much of the credit for the success of his Arctic picture, *Eskimo*, to the chef of a big Hollywood hotel. He says, "I took him along because I knew that after fourteen months in bitter cold and desolation only a fellow who could make corned beef taste like lobster a la Newburg was capable of keeping thirty-five men from individual and collective murder!"

"Going on location" has social values which shrewd producers have been quick to recognize. Work within a studio is necessarily very businesslike. It is on locations that players, director, and staff become better able to appreciate one another as human beings. Leading men find their "close-ups" are improved when they come to know the cameraman, not just as an adjunct to the camera, but as a person who also has flesh and blood and sensibilities.

Stars discover that the director who works with stern discipline on a studio stage is not a martinet, but a

charming conversationalist, an enjoyable friend. Friendships have developed on location which have caused directors and stars to insist on the same technical aides year after year. This element of personal friendship is a factor not to be overlooked when searching for the reasons behind particularly good work in any specific film.

20

SOUND RECORDING

Sound recording in studios has standardized upon the "light ray" method. In this method the motor of the camera and the motor of the recording machine are synchronized so that they run at exactly the same speed.

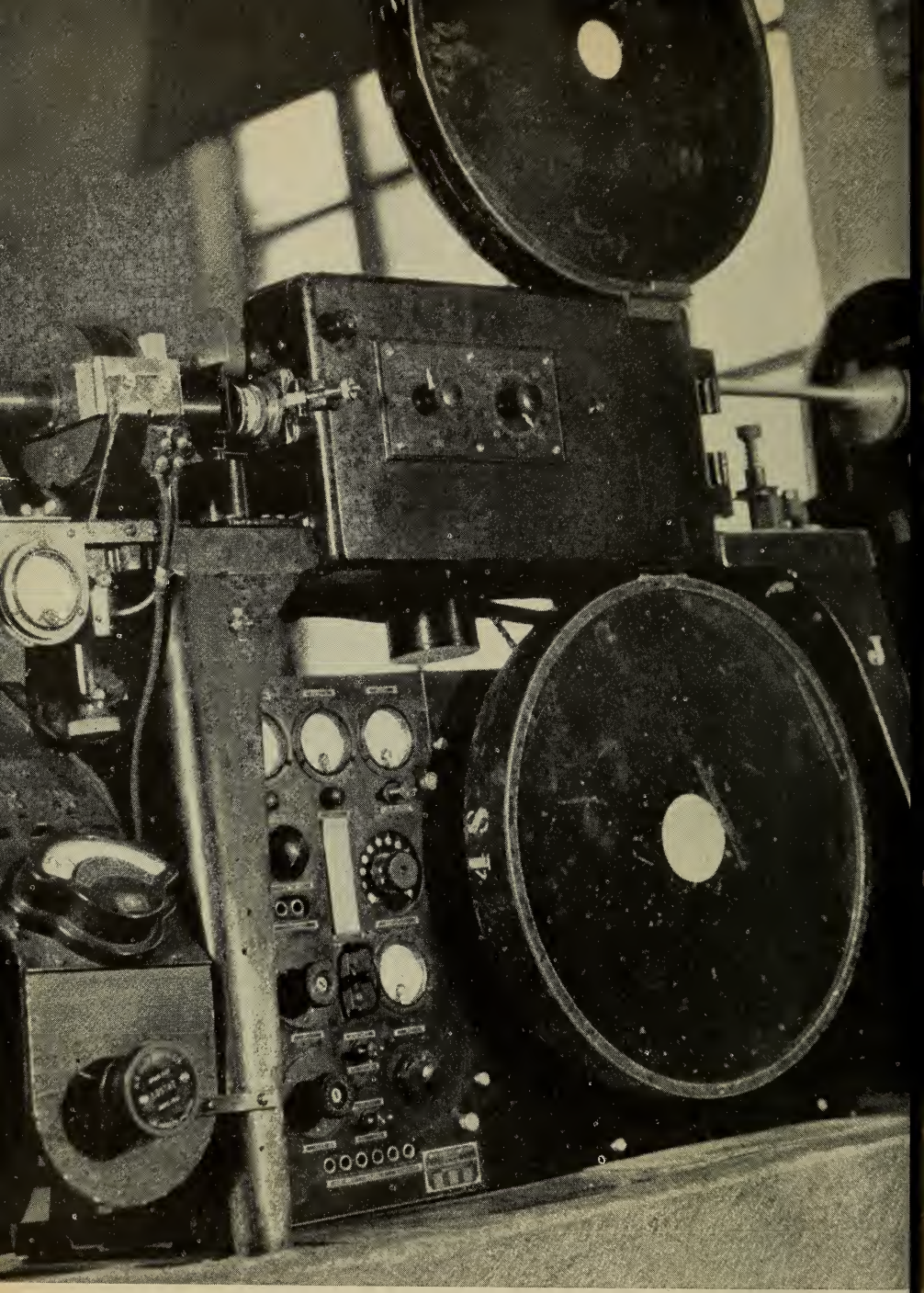
We have seen that when Edison, in 1886, began to experiment with the motion picture, he did it not for love of the cinema as such, but because he hoped to create a talking picture and thereby to sell more phonographs. This latter invention was the one which intrigued him.

But he failed to develop a really practical principle of synchronization, and the phonograph was an inadequate medium with which to reproduce sound in a large theatre. While Edison contributed priceless inventions to advance the process of silent film production and projection, his interest declined as the talking picture he sought defied his genius.

It was not until 1927 that the world had its first practical talking picture. It would serve no purpose here to list the several score of inventors who have worked on this problem since the time of Edison. Nor would it be anything but confusing to enumerate the excursions into one fruitless scientific bypath after another, before the light ray method was discovered. Suffice it to say that

Sound engineer looks through soundproof windows to a talking picture set and controls recording volume with dials at his fingers

Sound man puts a record on the play-back machine



Variable density light ray recording machine, studio type. The light valve is at left of rectangular black box (center).

for nearly four decades a talking picture formed the goal of a long line of eager scientists. That it eluded solution for forty years indicates the many scientific problems involved.

In fact, the first talking picture was not made with the light ray method. It was done by making an impression on a wax record, the method used for so many years in the phonograph industry. Difficulties in synchronizing and final editing made this method less popular than the highly practical light ray system. Wax-record recording is still used in film studios, but usually only in one particular and specialized manner.

The principle of the microphone has been described. It is understood that words spoken before the microphone on the stage have been translated into varying electrical currents. These now come over a wire from the stage to the recording machines.

The current comes to an "amplifying panel." This panel is similar to those used in radio broadcasting studios and long distance telephone exchanges. The purpose of such a panel is to amplify the original weak signal from point of origin by approximately a million times until it is strong enough to be projected by telephone for thousands of miles, or to be broadcast over the radio, or in our case to activate the light modulator of the talking picture sound recording machine.

There are two main systems of recording sound by light rays. One is called the variable density method; the other, the variable area method.

In the variable density method a beam of light passes through a slit about one thousandth of an inch wide into

a "light valve." This is a metal box with a front and sides, but with no back. It is about the size of three small match boxes laid together sideways. Inside the box, forming the tiny slit between them, are two flattened duralumin wires which look like tiny ribbons placed edge to edge.

The current generated by the actors' voices reaching the stage microphone causes these wires to come closer together and to go wider apart. The movement of the wires varies the slit and permits the beam of light to pass through into a tightly closed rectangular box, through which a reel of film is moved very smoothly and uniformly and not with the interrupted "stop and go" motion of camera and projector. On an eighth-inch path of this film the beam, acting as a pencil of light, reduces all sounds to horizontal marks. On the finally developed film these marks have various gradations of black, white, and gray, but they are of constant width.

In the variable area method, the width of the sound track varies but its darkness is uniform. The current amplified from the microphone comes to a recording device which is almost identical with an ordinary galvanometer, a common device for measuring electrical current.

The galvanometer has two wires to which are attached a tiny mirror. When the current flows through the two wires in a magnetic field, the wires move somewhat as we have seen them in a "variable density" light valve. The movement, however, causes the mirror to rotate slightly and to reflect light against a narrow slit, the image of which is focused on the film. This pro-

duces a constant exposure, but the moving mirror gives an image of a wavy line of light varying in width.

We are speaking here of a separate camera and a separate recording machine. There is a camera used by newsreel operators which has both photographic equipment and sound recording device in the same box, doing both jobs at one time and on the same film. But in studio practice it is more convenient to keep the processes separate.

We now have a "sound track" which has photographically recorded voice values delivered to a microphone. How is that "sound track," in a theatre, transformed back again to sound?

In the release prints used in the theatre, sound and sight are on the same piece of film. In the projection machine one light shines through the picture, carrying its image to the screen. Another light shines through the sound track onto a photoelectric cell. This cell sets up electrical current changes, duplicating those which were caused originally within the microphone on the studio stage. In turn these current variations are amplified and activate the diaphragm in the reproducing horns. The horns are giant variations of those used in radio receivers. Because of this, one hears in the theatre, properly amplified to meet the needs of its size, exactly the same "words and music" which were spoken to the original microphone months before.

As we have seen there is also a process for making wax records similar to those used for a phonograph and synchronizing them to the speed of the camera. It has been said that the process presents some problems when

the picture is edited. A variation of it, however, is used extensively as a supplementary process in the making of musical films.

In the wax process, the sound record is engraved with a jeweled stylus into a flat round cake of chemical soap about two inches thick. This stylus either vibrates up and down, cutting a so-called "hill and dale" type record, or sideways, cutting the wiggly trough seen in ordinary phonograph records. This movement is in accord with the varying electrical current set up by the voices impinging on the stage microphone. The one disadvantage of the light ray recording is that we cannot hear what has been said for several hours after the film has been developed.

It is possible to "play back" the record on the chemical soap, usually but incorrectly called "wax," but one such play back might ruin the record. Normally the record is merely the original mold for a later one made of hard vulcanized rubber, like that of a phonograph.

Although this is not necessary for speaking scenes, for musical pictures it is important that the artists hear immediately the number they have just sung or played. To take care of this need, a record was developed with a metal base on which a compound similar to celluloid had been placed in a thin layer. This layer is stout enough, having been cut by the stylus, to reproduce the sounds several times, enabling the artists to check the quality of their musical productions.

Sound recording on location proved an early problem of the talking picture. In the studio, sound recording

may now be done in one central building or in portable stage units. But less than a decade ago there were sound effects wanted for *Trader Horn* which could not be made then because certain African roads and bridges were unable to support the weight of the truck carrying the heavy sound recording equipment. The truck weighed fourteen tons and it could penetrate Africa only so far as that weight could go with safety.

Out of this experience, however, clever sound recording research engineers gained much. They saw that their art would be circumscribed and retarded if their devices could not go hither and yon as freely as the more portable motion picture camera. They designed vacuum tubes, condensers, and other portions of the sound recording equipment on a miniature scale. They made lighter devices, which would not work. They made and discarded scores of would-be portable recording equipments.

But, by the time Van Dyke, the same director who made *Trader Horn,* went to film *Eskimo* in the Arctic a few years later, a sound recording equipment had been devised weighing only 350 pounds. This weight is divided between five boxes. These boxes can be carried anywhere—by canoe or boat, in the back seat of a light car, on horse or muleback, or by hand. Today, with such portable equipment, there are no places to which the talking picture cannot go and return with both authentic pictures and authentic sound.

What is called the re-recording process is an interesting and valuable development in sound recording technique. Sometimes the sounds originally recorded at the

time a scene is photographed may be incomplete or inadequate for the dramatic effect desired, and the re-recording process is used to add other sounds. On each of these machines there is a sound track. One track may have spoken dialogue; one music; one the general noise of a large crowd, and one the noise of a thunderstorm.

In a projection room near the re-recording apparatus, a technician sits before a bakelite board that has more than a dozen knobs which are operated up and down in separate slots. Each one of these knobs controls the volume of one sound track.

The technician watches the picture. If the scene is a long-shot of a crowd, the crowd noise is the most important element, and he moves the knobs accordingly. In a close-up in which it is necessary to hear the voices of the principal players, the noise of the crowd, a thunderstorm, or any underlying music are all reduced in force, and the dialogue is raised. A competent technician will do this so cleverly that no one in the audience will consciously realize that the dialogue has, for an instant, taken precedence.

The sound from each sound track, controlled in volume by the technician, combines with the sounds from the other tracks and is recorded in *one* recording machine which produces the final releasable track. It is from this secondary recording operation that the process derives its name.

No elaborate explanation is needed to show the value of this development. Consider the last time you were in a crowd. Perhaps you had a quarrel with someone.

The two of you wrangled furiously, and yet the noise around you was so great that no one heard a word.

But if that quarrel were important in the development of a talking picture plot, theatre audiences would need to hear every word. The audience in a theatre unconsciously take a part in a motion picture far more than they do in a stage play, in which, more often than not, they merely observe other people act. In pictures, however, because the technique is so much more intimate, the audience tend to think the thoughts of the actors themselves, and often experience the same emotional reactions.

This method of adding dramatic values by appropriate music played quietly under dialogue helps to intensify the attention of an audience. This would be impossible without the special sound recording technique just described.

Recall the scene in *Maytime* in which John Barrymore speaks through a closed door to Jeanette MacDonald, telling her that Paul Allison (Nelson Eddy) is to sing opposite her in her first American opera. Just before Barrymore speaks Allison's name, there begins, very softly under the dialogue, the "Sweetheart" song. Eddy had sung this to Miss MacDonald in their love interlude of a day seven years before. The song sets the emotional values of the scene instantly and builds its dramatic power, and yet the technician has manipulated the knobs so deftly that the music never for a moment disturbs the dialogue. Every word is distinct. The music is just a murmur but quite clear enough to accomplish its emotional mission.

When practical picture sound recording started in 1927, sound engineers had little more than a method of synchronizing sound and sight. The system was so inelastic that, if a player were seated, he could not stand up and walk away in the same scene. The camera would have to cut away from him while the movement was accomplished. The microphone was almost immovable, and the camera was placed, with the cameraman, in a half ton ice-box arrangement, making it impossible to follow a player in even such a simple maneuver as walking upstairs. Photography was impaired because the camera "shot" through a plate-glass window. To go outside the studio for the exterior locations which made silent films so pictorial was at first impossible because of the bulky equipment.

But the film industry rose to its opportunities in a manner which has been highly commended. It put clever scientists at work solving the problems stated. Then, when a research worker in one studio discovered a simpler and more effective means, that discovery was not held back, but given at once to all the studios. Cut-throat competitive methods, by which progress has been held back in some industries, were sedulously avoided by the picture producer. By co-operative and inventive effort they carried the new art of the talking picture forward certainly twice as fast as would have been possible had there been competitive fighting between plants for various important scientific discoveries.

The original sound heard in theatres had deficiencies which irked ambitious picture producers. It reproduced rather well over a middle range of tones, but low

notes were deficient or had a bad extra resonance, a strident sound. The letter *s* had to be avoided when possible, because of an exaggerated hissing effect, and high soprano voices sometimes recorded or reproduced with a false and inaccurate shrillness.

To overcome these defects at least five hundred varieties of the basic recording and reproducing methods have been made by one studio alone. For the entire industry such variations would run into the thousands. Today, as a result, we have recording and reproducing systems which reproduce the low basso and the high soprano with nearly equal fidelity, which accentuate no letter of the alphabet at the expense of others.

It has been said several times that the motion picture as a whole deserves unstinted credit because, in a short life of fifty years, it has made more definite artistic advances each year than any other form of art. Praise belongs in even greater measure to the sound recording process. Practical sound recording for motion pictures is now just starting its second decade. Today, its refinements and its great range make the crude "sound" of 1927 seem almost ridiculous. Sound recording has increased so progressively, and so evenly, that the average theatregoer is frequently unaware of individual developments which have brought spontaneous applause from the scientific world.

It is possible that many of the important advances in sound recording might have been delayed in their inception had it not been for Lawrence Tibbett.

Tibbett brought to the immature art of sound recording a voice which put too many demands on the equip-

ment of the time. In order to record him adequately and to make possible a satisfactory reproduction of a marvelous voice, research experts worked twenty-four hours a day to correct the faults found in the basic process.

Questions are frequently asked about so-called process or "trick" photography. Studios keep these methods secret. There is no phase of picture making more misunderstood than special effect photography. "That's a trick shot," people are heard to say, a disparaging note in their voices.

And actors have roared with rage when, following a realistic fight or struggle on which they put days of hard work, somebody near them in a theatre says, "Ah, it's all done with mirrors."

Studios feel keenly that to give emphasis to trick shots, despite the fact that they add immeasurably to an illusory effect and therefore to the entertainment value of the film, is to breed the unfortunate sort of misstatement quoted above.

Trick shots are frequently used to give extra magnitude to a setting when such added size could not be accomplished in any other manner. For example, by what is called the "glass" process a ceiling was put on the great ballroom in the Palace of the Czars shown in *Rasputin and the Empress.*

Now this room was three hundred feet long and very expensive to construct. A ceiling could have been physically built. But, if it had, photography would have been impaired, for the cameras could not have secured the effects they did. So a ceiling was painted

on glass. The camera "shot" through this glass onto the setting. The painted ceiling fitted photographically on top of forty immense constructed pillars, each thirty feet tall. In other words the actual palace at Petrograd, because of its ceiling, could not have been photographed with the perfection of beauty which the use of this so-called "trick" process made possible.

Effect shots of this sort are never used when better results can be secured through actual methods. Studios seek to simulate life and by experiment and invention they have carried that ability to remarkable lengths.

Not a "trick" so much as a photographic effect process is that achievement known as "montage." *David Copperfield* and *Maytime* present two fine examples. In *David Copperfield*, by a series of short scenes rapidly succeeding each other, great dramatic pace is given to the flight of little David from his cruel stepfather. We see him in crowds, in rain, hiding in a farmer's haystack, running, walking, stumbling, until he finally finds haven in the arms of his aunt at her seaside cottage.

In *Maytime* it was necessary to show the rise in operatic prominence of Jeanette MacDonald over a period of seven years. Programs of great opera houses in Paris, Milan, and Madrid were shown, then through them came the figure of the star dressed in the rôle of the opera, singing the major aria. Rapidly, and here a magnificent musical medley arrangement by the music department took its definite artistic part, the montage spanned the whole operatic horizon of the picture at its zenith.

Montage effects are secured in various ways. Most popular is the "wipe" wherein photographically one image is literally wiped from the screen, as if by a magic cloth, and its place taken by a new image. Also there are methods of having three or four different images share the same film frame in the manner of the montage photographs now so popular in magazines and newspaper rotogravure sections. Montage is one of the newest arts of the motion picture and its importance has mounted so rapidly that all the film industry was pleased when the University of Southern California honored Slavko Vorkapich for the *Maytime* montage we have mentioned.

Young scientists may well look to the motion picture industry for inspiration. Photography has gone a long, long way since the crude coated metal plates of Louis Jacques Mandé Daguerre. Many great advances have come in the last twenty years in the path of the motion picture. We exclaim today over the marvels of the "candid" camera and wonder that still photographs can be made in a room lighted by only one candle. But we forget to wonder whether this achievement would have been possible had the motion picture not grown from infancy to maturity in two decades.

It has gone quite unsung, but the records of science have few prouder pages than those in which more than a thousand improvements in talking picture recording have been entered. Edison today would smile with deep satisfaction if he could note the marvels achieved by modern young men in the solution of a problem which eluded him.

21

MUSIC IN PICTURES

THERE ARE two main methods by which music is used in sound studios. In one, in so-called "musical pictures," the music as sung or played by the character or characters is worked into the framework on a par with, or greater in appeal importance than, the story. Types of such musical films are *The Girl of the Golden West*, *The Gold Diggers*, *Firefly*, and *Naughty Marietta.*

But the place of music in the cinema by no means stops with productions like these, for it is used to enhance dramatic effects in every photoplay. It is employed to greater extent now than ever before in film history. If individual music libraries of all the studios could be assembled in one place such a collection would be the largest music library in the world. In fact the music library of one single studio is rated as the third largest in the United States, for it has more than eighty thousand numbers.

Direct criticism of a musical picture like *Maytime* or *Rose-Marie* is a simple task for anyone knowing music. But criticism of music that is applied to dramatic, non-musical productions must arise from an intelligent understanding of special factors not found in the musical picture taken by itself. If one is able to understand why a

certain composition, played under an important dramatic scene, increases its emotional values, and why no other composition would bring as definite a reaction, then one has learned to evaluate music in photoplay production.

The process of playing music under a dramatic scene is called "underscoring." It is not a new device, but with the coming of sound it has developed new methods and new importance. In the days of silent pictures when there was no spoken dialogue, music was played under every scene in a big picture. Important productions such as *Ben-Hur*, *The Covered Wagon*, and *The Big Parade* had complete, unbroken scores written for them. Radio announcers often wonder why Dvorak's *The New World Symphony* is so frequently called for by those telephoning "request numbers." This composition set the emotional tempo in the scene from *The Ten Commandments* in which Moses led twenty-five hundred Israelites in flight from Egypt. Here the combination of pictorial and dramatic beauty with a fine musical number gave a definite impetus to interest in *The New World Symphony*.

Photoplays of the talking era seldom have uninterrupted musical scores. There are too many scenes in which music conflicts with crowd dialogue or action.

The musical director deserves greater credit for underscoring a talking picture with fine orchestration than for the same work applied to a silent film. It is one thing to bolster voiceless pantomime. It is another to insert music under dialogue so that it increases the emotional reaction started by the words, without interfering with the aural reception of these words.

Because silent picture scoring was comparatively easy, some orchestra leaders grew careless. They used the same musical numbers over and over to get the same effects. One piece, "Hearts and Flowers," was so overworked in the early days that it brought a laugh each time it was played under a scene of pathos. Today it would be exceptional for a musical director to use it under a pathetic scene. Its intent is too obvious.

Two types of scoring remain unchanged from the days of the silent picture. The first concerns the scoring under introductory and credit titles before the picture starts; the second, scoring for those moments between the time the words "The End" flash on the screen and the next film attraction begins.

The first is important because it sets the emotional tempo of the coming picture during an actionless, but unavoidable, moment between the first words of the main title and the first frames of the first pictured scene. Obviously a number to be chosen for use under the main titles of a Marx Brothers comedy could not be used for *Camille*. Tragedy, comedy, romance all have their musical counterparts. The genius of a studio musical director lies in his ability to select just the right number for a specific scene. Orchestra leaders, librarians, arrangers, orchestraters, and copyists are among the musical technicians needed for the preparations of the musical score of a picture. Dramatic underscoring is done with a full orchestra and with vocal choruses as required. The scoring occurs on a darkened stage. When the music is ready for recording, the music and the sound departments join forces.

For some musical scoring, the microphone is the same as that used for dialogue. Three or four special microphones, somewhat different in appearance are also in operation. Each of these does one special task particularly well. One such microphone does best with a singing voice, another with a large orchestra.

To the right of the orchestra there is a motion picture screen. When the photoplay is flashed on this screen, the leader, his score in front of him, directs his musicians.

Before he raises his baton, however, there have been hours of hard work. He has read the scenario of the picture, perhaps many times. There have been conferences with the head of the music library, and with original composers. He has consulted the research heads to gain the benefit of their deep study into customs and manners of the given time. He has talked at length to special research experts in his own field.

He knows he cannot use a piece of music in a motion picture score which musicians will recognize as having been composed after the period of the story. He could scarcely use a contemporary song in a picture of eighteenth-century locale. Above all things, his training in a motion picture studio must have been long enough to develop as second nature his ability to fit dramatic scenes into the musical number which, psychologically, best supplements action and words in its efforts to create a special emotional response from an audience.

It requires hard rehearsals and careful adaptation to fit a number into the exact time required. Directors of underscoring are often successful composers in their own right. Because difficulties frequently arise which

Stenographer types dialogue from the film
Cutter (film editor) assembles talking picture scenes

Film editor with movieola

Film editor assembles the picture

cannot be exactly corrected with any existing composition, genius in composing is necessary.

An example of a required original composition is the score which the eminent composer, Herbert Stothart, wrote for *Night Flight*, a dramatic story of an aviator's efforts to fly through a storm. Something was needed to offset the monotonous whirr of an airplane motor, something to make that motor more important as a dramatic medium. Stothart composed a score which supplemented the sound of the motors. So cleverly did he accomplish his task that few who hear the score can recognize at what point the motors leave off and the music begins. Critics were wise in their high praise of this achievement.

For modern and original musical photoplays like *Gold Diggers*, *Wake Up and Live*, *Broadway Melody*, *Waikiki Wedding*, and *Born to Dance*, composers of original popular songs are required. At one time popular songs came almost entirely from the musical comedy or vaudeville stages. Today, a good half of the songs that everyone whistles spring from musical photoplays. It is interesting to note that popular songs have only about one-half the life and a fraction of the sheet music sales they enjoyed when they came exclusively from the stage. The radio and the motion picture combined have given songs an audience so large that "catchy tunes" become popular in days rather than in months.

Every school boy or girl can name a score of danceable, singable songs or orchestral numbers which originated in "some movie." Among the many are numbers like "Singin' in the Rain," "Off to Buffalo," "I've Got

You under My Skin," "You Were Meant for Me," and "The Wedding of the Painted Doll."

The question of musical copyrights is involved. No artists are quite so thoroughly protected as present-day composers. Not only do musical copyrights exist in every civilized country, but musicians have strong professional organizations to see that these copyrights are observed, not only in their own land, but abroad. No portions, for example of the corps song of the Marines or any of the Gilbert and Sullivan operettas may be used without the payment of royalties.

No music may be used without such payments except when it is said to be in the public domain, a phrase used with the same meaning for authors. It means that copyright restrictions on a piece of music have expired, and that it may be freely used without restriction and without pay. Roughly, most numbers, the composers of which have been dead fifty years or more, are in the public domain. Included are all the selections of such masters as Beethoven and Mozart, *Tannhauser*, and all the other operas of Richard Wagner. "The Blue Danube" waltz and every other composition of Johann Strauss, belong in the public domain.

Protection by copyright for writers and composers is akin to the patent granted an inventor. It reserves to him exclusively for a period of years all financial rewards accruing to each and everyone of his compositions which has this valuable legal protection.

In offering a new composition, composers must be certain that they have not accidentally simulated material already copyrighted. To protect against a con-

tingency like this, every studio has a "walking musical memory." In one studio a man boasted that he knew ten thousand musical numbers. He had a standing wager that no one could play a tune which he could not name. Until the time of his death a few years ago he never had to pay a bet. His remarkable memory saved his studio from a number of legal complications which might have arisen from unconscious musical similarities.

22

EDITING THE FILM

VERY FEW PERSONS who attend motion pictures have any conception of what happens to a film production following the completion of photography; or, in studio parlance, "after the cameras stop grinding."

Almost every fairly regular theatregoer, who also reads the photoplay pages of his or her daily paper, can more or less correctly define the work of a cameraman, a director, or a star. But to all except a very few such cinematic terms as "laboratory," "cutting," "hypo," and "soup" have no more meaning than a sermon in the Greek language delivered to a tribe of Kaffirs in darkest Africa. For those who really want to understand and enjoy motion pictures this is not a healthy condition.

The period required to produce "finished prints"—those used for actual theatrical exhibitions—is one third of the whole time needed to carry a story from words on a few hundred sheets of paper, to the pictured images which parade nightly across the metalized screens of thousands of motion picture theatres.

The period of photography is only one sixth of the total. And yet because it is more glamorous and more spectacular, easily ten times as much is known about its processes than about those concerned with selection

of stories, the preparation of sets, costumes, and research, or with the final step of laboratory and editing technique.

It is necessary for the student of photoplay evaluation to understand the problems of the "cutter" or "film editor," and the film laboratory technician. Very few people are sufficiently trained to know when these professionals, who work without the emphasis of publicity have done successful work. But bad film editing, as we shall see, can easily nullify fine direction and fine acting. It goes hand in hand with good laboratory technique, but this latter phase will be studied separately.

The minimum "after photography" period is two months. However, when intricate special effects were required, pictures have taken as many as two years between the end of photography and the final shipping of "release prints" to the theatres. For color photography the time needed for completion is much longer than for the black and white medium.

Before the picture starts, a "cutter" is assigned. "Cutter" is his studio name, but he has a more formal title, that of film editor, which more clearly defines his function. The editor in a newspaper uses periods, commas, and semicolons to increase the written power of a newspaper article. A film editor arranges and rearranges close-ups, medium shots, angle shots, reverse shots, and long-shots to give the picture story he assembles, scene by scene, maximum dramatic emphasis.

The film editor receives and places in flat metal boxes, two exposed and developed films for every scene taken. These boxes are filed on shelves in his cutting room. The

first roll is the pictured scene, the second the sound track.

If the picture is one which has required a great deal of research, the cutter will have much to do in advance of production. For *Lives of a Bengal Lancer*, as one example, scores of tests were made of individuals considered for character parts in this story of natives of India and of British soldiers. Endless tests were made to determine exact shades of make-up, and costumes were also tested by the camera to determine their photographic qualities. In the period of preparation the cutter shows this preparatory material over and over again at the call of the producer and director until all decisions as to cast, sets, make-up, and process photography have been made.

This part of the editor's work furnishes no clue of his creative capacities, for in this period of advance photographic tests, he is only a capable librarian who receives and files in film form various different pieces of photographed data. His main duty here is to keep such data properly filed and segregated so that he can produce immediately the right piece of film, out of many of the same general division.

Once the picture starts, however, the stature of his importance expands as rapidly as a paper sack placed at the mouth of a ten-year-old boy.

With the beginning of actual photography on the sets, the laboratory superintendent receives each day the various "takes" of all the scenes filmed the previous day. These are also called "rushes" or "dailies." If the company is on a distant location, the film is rushed to the laboratory and back by speeding cars, planes, or

racing motorboats. Such messengers may leave a location three hundred miles away at 7:00 P. M., and rush to the studio laboratory where the night workers process the exposed film so that it may start back to the location by noon next day for inspection by director and cast.

Film editing is one of the many professions in motion picture making which has been successfully invaded by women. *The Good Earth* was edited by a man and the majority of film editors are men. But some of the greatest are women. A woman, for example, edited *Romeo and Juliet*, and a woman film editor, Dorothy Arzner, has become the only woman film director.

Perhaps it is the sense of intuition with which women are credited to a greater degree than men which makes women so successful in editing. There are not as many women film editors as men, but when they attain their full powers, almost without exception they do work of high quality.

Each day the film editor shows to the director scenes made the day before. The director may or may not have invited his stars and featured players to be present.

Of several "takes" made of each scene the director indicates one as the best. His choice covers two parallel standards of excellence: the first is that of acting; the second of photography.

The rolls chosen are placed in metal boxes as previously described. These are marked with the scene numbers. The editor gets this number from that on the "slate" held before the camera at the conclusion of each scene. The process of photographing this identifying slate with its symbols has been described.

Film editors have different methods. Some do not assemble the picture until it is nearly complete, but the majority make what is called a day-by-day "rough cut." For this process an editor fastens his separate rolls of film together as each dramatic sequence is completed before the cameras. This gives him a rough idea of the progress of the story and gives the producer and the director a quick clue to its weaknesses. These weaknesses can be corrected by revising the scene and retaking it. In his rough cut, the editor can also practice balancing the dramatic values of his long-shots and close-ups. This highly creative function will be described later in more detail.

His mechanical aid in cutting is a remarkable device. It has a feeding slot for the sound track on one side which, with its own photoelectric cell, reproduces the sound just as audiences will later hear it in the theatre.

On the other side the film passes behind a glass lens about two and one-half inches in diameter which magnifies the 35 mm. frame of each separate picture to a size large enough for practical editorial purposes. A light shining upward from behind the film provides sufficient illumination to give a picture, compact for practical editing, yet large and well-lighted enough to be viewed adequately without eyestrain.

The editor watches the enlarged image and hears the sound coming through a miniature reproducing horn. His first concern when he runs a piece of film is to be certain that sound and sight are absolutely synchronized, that the "start" marks on both picture and sound track are in exactly the right place.

Later his editing machine enables him to decrease the length of a scene, to take out one word and substitute another, to do many side functions of his craft. Without this compact editing machine, it would take him four times as long to do his work. It could be done in a regular projection room but another man would be required, a projection machine operator, and there would be a loss both in time and operating space. Film cutting could be done by the unaided eye, but 35 mm. is so small that no producer would submit a valuable employee to so great a strain.

The editor's hardest work begins the instant photography of the picture has been completed. He works rapidly to produce what is called the "first rough cut."

This, for the average eight to ten reel finished picture, will run from nine to sixteen reels. It will contain all scenes in full length, and also all added new "business," or action not written in the scenario, which was photographed by the director under the inspiration of actual set conditions. Rough cuts of talking pictures rarely exceed sixteen or seventeen reels. In silent pictures, when pantomime took the place of dialogue, directors sought for effects in many different ways. A "rough cut" picture in twenty-five reels was not exceptional, and the rough cut of one Gargantuan film ran to more than one hundred reels.

The associate producer, or the director, then has this rough cut projected. With a stenographer at his side, who makes her notes under a light bulb carefully shaded so that the illumination cannot interfere with the brilliance of the projected picture, the producer dictates

certain suggestions. Perhaps he feels that a different "take" of a certain close-up would give a better effect. Or he will indicate the value of a possible rearrangement of a whole sequence, and some scenes or portions of scenes may be omitted entirely.

The original "balancing" of various elements, close-ups, long-shots, has been done by the film editor. This is his particular artistry, one for which he has trained himself by working from four to seven years as an assistant or apprentice cutter. A good film editor develops so strong an instinct for dramatic values that his judgment is usually accepted by producers and directors.

In the rough cut, however, he has deliberately left scenes long so that the judgment of others may join with his in a discussion of what should be cut and what scenes could be improved or shortened by retaking or rephotographing.

The picture is projected over and over by the producer, the director, and the editor. Changes and shifts are made until this small group of men, sitting for hours in a dark projection room, decide that they have made alterations as far as they can without an "audience reaction."

Film makers are the first to see the danger in editing a picture only in an isolated room within the studio in which the production was made. They realize the false values which can creep in when men go over the same ground for weeks. Such repetition is bound to dull the effect of each scene on the emotions of the beholders. Therefore, final decisions as to changes are always made by the public, the ultimate consumer.

What is called the "first preview cut" is purposely overlength so that by restlessness and rattling of programs the audience in the theatre selected for the preview may show the producer where they think the picture is dull and where it drags.

The first preview, or experimental showing, is usually called a "sneak." In order to assure a nonprofessional audience, the picture is taken with secrecy to a theatre usually well outside the Los Angeles area. Neither the press nor players are invited because the picture is purposely imperfect. Only the producer, his secretary, the film editor, and the audience attend. The audience of the theatre is in effect a collection of guinea pigs in a semiscientific experiment. They aid the film makers by showing their pleasure or displeasure through physical actions or vocal remarks, and in their criticisms written on postal cards provided by the studio.

Producers are strongly guided in their future editing by what they hear and see while a picture is being unreeled at a preview, but supplementary to this direct eye and ear testimony come the critical postal cards. Many of them are inconsequential, but there are always 20 per cent or more which show fine logic and a true sense of dramatic essentials. From such cards the producers gain important leads in the matter of further cuts, shifts, or possible additions.

Other by-products sometimes develop from this source. One preview attendant was so thrilled by a certain picture that he described its effect on his emotions in one truly inspired sentence. He was sought out and paid for that expression, and it became the cen-

tral theme of a million dollar advertising campaign for the photoplay he had enjoyed.

After the first preview in a theatre the last retakes are ordered, if they are found to be necessary. It has been seen that retakes are ordered at three different stages in the production. They are called for at various times while the picture is being photographed. These retakes are usually given to bolster up story values which seemed strong enough in the original scenario but showed weakness when actually photographed. Retakes are ordered after the picture is finished, after it has been roughly assembled, but before it has had a public preview. Retakes at this period are usually for "polishing" purposes. When sequences are assembled, certain scenes may prove too long or too short to give perfect movement, or the tempo may be wrong, or any one of a number of technical dramatic points may need adjustments more salutary than those achieved by the use of a cutter's razor blade.

The third era of cutting comes after the first audience preview. Retakes here are for two essential purposes. First, they are to correct wrong dramatic emphasis which brings dreaded false laughs in serious scenes, or leaves the audience unresponsive when a definite melodramatic or romantic reaction has been sought. Next, they enable the producers to take advantage of any sudden interest shown by the audience in a player of a minor rôle, who until then was inconspicuous and unknown.

Personalities who attract playgoers to a theatre in numbers are so great a financial asset that the emergence

of an unknown actor at a preview causes great stir among the film producers. There were retakes galore to enlarge, or in film parlance to "fatten," the part of a little girl called Deanna Durbin after a preview of *Three Smart Girls* had given to her work an audience verdict of extraordinary enthusiasm. And at a preview of a certain college picture a few years ago, no one grew excited about the star, a well-known Broadway stage favorite. But dozens of preview cards came in saying, "Who is that fascinating fresh kid?" The "fresh kid" was Robert Montgomery, and within two years he was in the rarified circle of screen stardom.

The retakes ordered after the first theatre preview are perhaps the most important because, as we have seen, comparative dramatic emphasis has had an acid test under exact theatre conditions. By thus correcting matters of emphasis, retakes frequently carry a picture from mediocrity to greatness.

The Sin of Madelon Claudet offered particularly definite proof of the importance of clever, thoughtful retakes. This photoplay, in which Helen Hayes was the star, told the story of a mother's sacrifice for her son. It was first previewed at a suburban theatre, and it did not meet with approval. People laughed at the wrong times and pathetic scenes left them unresponsive.

Retakes were made. When these were read there seemed to be very little difference between them and the original scenes, but the emotional impact of the new scenes was far more accurate and sincere. Previewed a second time, the picture succeeded gloriously in impressing its audience.

Every point that failed at the first preview "rang the bell" decisively at the second. It moved with an unbroken mounting crescendo to its climax, and it won for Miss Hayes the feminine acting award of the Academy of Motion Picture Arts and Sciences.

An amusing happening illustrates the change brought about by retakes. One motion picture magazine reviewed *The Sin of Madelon Claudet* as given at the first preview, but not the second. Another magazine had a critic at both previews, and printed only a review of the final showing. Magazine number one characterized the picture as the "worst" of the month. Magazine number two acclaimed it as the "best picture of the year." And both reviews were right!

There may be other theatre previews to settle minor points or to introduce the picture to the press, but the first sneak showing is the most important from the standpoint of the film editor. It brings his work to a head. From here on, speed is an essential, for money is being lost every day that a picture costing a million dollars or more is kept from the theatres.

When editing is completed, the work print, made from the selected positive prints from the total of scenes photographed, is sent to the negative editors. There a negative is assembled, matching scene for scene, the work print, which through all the vicissitudes of previews, retakes, and editing, has come down to final approval by the producers.

Now the production is ready for the laboratory which will use the negative to reproduce separate release prints furnished to theatres for exhibition purposes.

23

DEVELOPING THE FILM

One of the most vital technicians in all film making—the laboratory superintendent—is the "forgotten man" of the film industry. The casual theatregoer may for years attend and enjoy photoplays and still remain ignorant of the value of this man's work. Yet he can make or mar the appearance of the greatest scene ever photographed. And by the improvement of his technique through the years he has made pictures vastly more attractive to the observer and, by the same token, dramatically more effective.

He is in charge of all activities whereby film sensitized in the cameras is developed to bring out its latent pictorial image. He superintends the daily output of "rushes," or scenes photographed on the sets the day before; but his major responsibility concerns the making of release prints of finished pictures, the prints commercially exhibited in the theatres of the world.

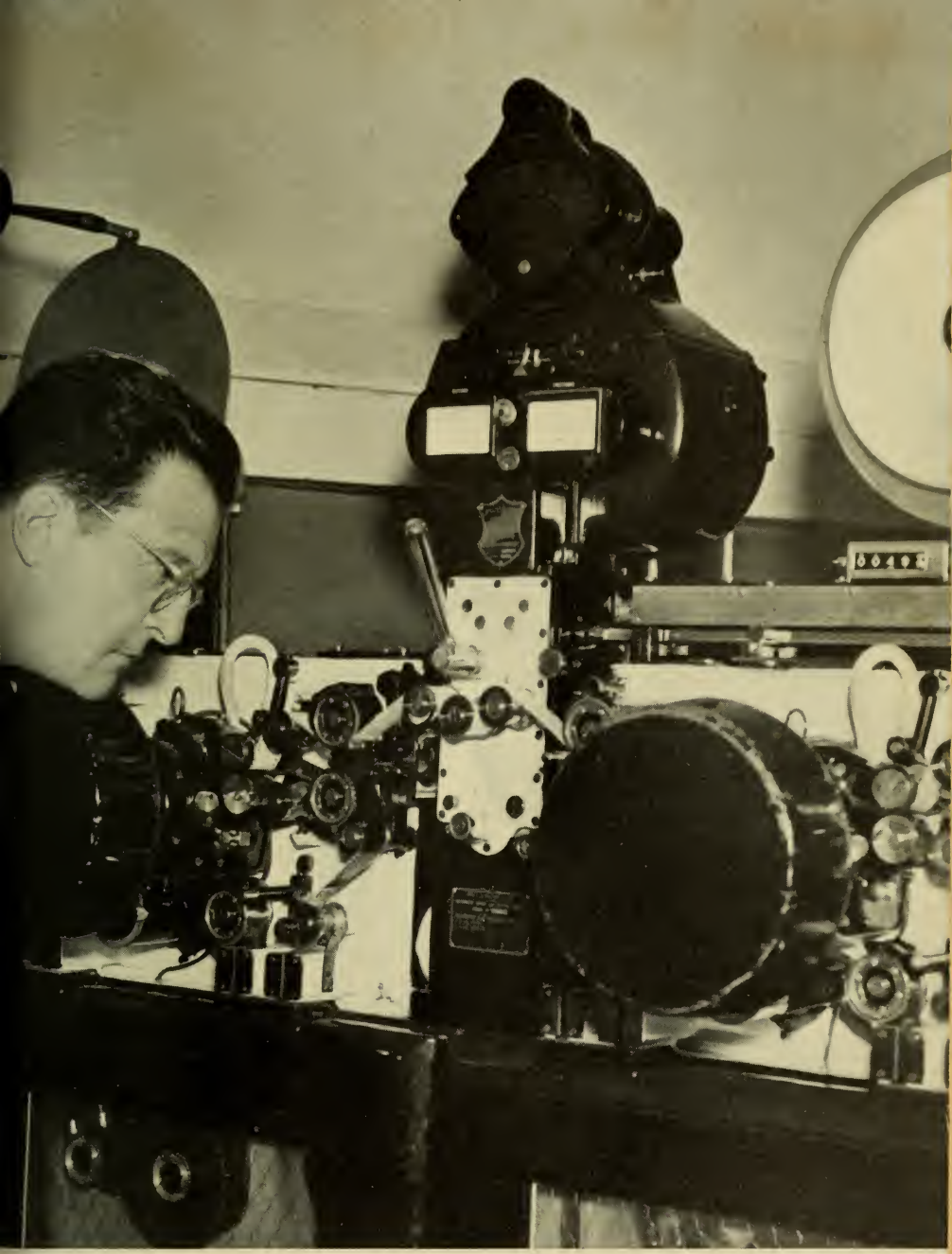
To convince yourself of the part played by the laboratory superintendent, have the theatre manager in your community show a picture made in 1909, then one produced within the current year. People could *see* pictures thirty years ago, but not much! The images were either blurred and indistinct, or the photography so bad that it lacked contrast and emphasis.

The laboratory superintendent is the czar of a realm which is always seventy-four degrees winter or summer, and which has a humidity that makes its atmosphere seem always a little "sticky." Film tends to curl in dry air, but the standard heat and humidity of the laboratory prevent this. In one day for a single studio the laboratory technician will run through his various machines, over 600,000 feet of film or an average of about 219,000,000 feet a year. This is 4,182 miles or the distance from Los Angeles to New York and back to Kansas City. These figures are for one large studio. Lovers of statistics may toy if they wish, with figures of the sort based on the total of 2,000,000,000 feet of film used annually by the American picture industry as a whole.

By inventing a superbly clever device, the modern laboratory head has made sure that he will never again have to worry about temperatures. In the old days, a love scene would be clear and brilliant in a print made one day; muddy, foggy, or dull and lifeless in prints produced twelve hours later. One of the great contributing causes was temperature, for if film developing fluid varies two tenths of one degree plus or minus sixty-five degrees, a definite impairment of photographic quality can be noted.

But today a controlling thermostat makes such a change virtually impossible. A laboratory superintendent's struggle to keep stationary the temperature of his developing chemicals can be compared with a doctor's efforts to bring a fever patient back to normal.

The term "print" has been used. The original nega-



Laboratory expert inspects new high speed type of automatic film printer

Adrian, noted studio gown designer

tive film as it is placed in the camera has on a celluloid base an emulsion coating of several chemicals, the principal of which is nitrate of silver. The famous quality of nitrate of silver is this: when it is exposed to light, its white crystals turn black. Put this exposed film in a bath of a special chemical formula and it is "developed"; that is to say, the unexposed nitrate of silver is removed, leaving light portions on the film. The black portions on which the light had acted chemically remain untouched.

But this developed film is quite the opposite in light values from the exhibition print which, when strong light is shown through it, projects enlarged and moving pictures, lifelike and natural, on theatre screens.

Developed negative film portions which the camera saw black or dark, are in reality light because little illumination came through the lens. On the contrary, black portions mean that a great deal of light was focused on the nitrate of silver emulsion. To bring these light relations back to normal a different type of film called positive is exposed to light coming through the negative. This is called printing from a negative, and the result is a positive print. Positive prints in celluloid form are the counterpart of the paper prints made from still-life negatives exposed in a hand camera.

It requires about two hundred and fifty prints of each picture to supply the American theatres alone. These two hundred and fifty prints are divided between thirty-five or forty regional offices called exchanges. Since motion pictures are perishable products, the value of which diminishes with each day of their age, profits in

the film business depend on getting new photoplays before as many people as possible while they are new.

If it is to succeed financially, some accountants set an arbitrary figure of 80 per cent of its cost as the amount a film must make the first year of its life. A national "release date" is set on which each exchange begins renting these positive prints to the theatres in its geographical area. With 250 prints, 250 exhibitions at top of "first run" prices are assured during the first week.

Once making this great quantity of positive prints (250 prints of a ten-reel picture would require 2,500,000 feet of film) was a laborious, dirty, wet process. Positive film, sensitized by "printing," was wrapped, 200 feet at a time, around wooden racks about four feet by four feet. These were worked rapidly up and down first in a tank of developer, and then in a tank of "fixing solution," or hypo, in order to stop the developing action and permanently "fix" the photographic image. Then they were given a final washing in a tank of water to remove the hypo. In absolutely dark rooms, men in rubber clothes slipped and slid in a world of wetness.

Today developing is done by an almost human machine. This machine, sixty feet long, occupies a room brilliantly lighted at one end, and semidark at the other. In the dark end sensitized positive film which has been through the printing machines enters a series of tanks which descend partially through the floor.

The film as it comes from the printing process is yellow, but one or two loops through the developing tanks brings out the varying degrees of black, white, and gray which are the light values of the picture.

When the developing process is finished, the film loops into another tank containing a second chemical formula known under the trade name of hypo. This is called a fixing bath because it stops the action of the developing fluid and permanently fixes the image on its celluloid base.

The loops then go into a third series of tanks where water washes off the hypo. The looping continues through a high glass case in which brilliant electric lights, plus a current of warm air dries the film as it moves up, then down, then up. Finally, dry and in finished form, it comes out of the cabinet and is wound on a reel. The time elapsed has been about forty-five minutes, in which it took 2803.25 feet of unbroken film to span the physical length of sixty feet between the beginning and the end of the developing machine.

But before developing can be done, printing must occur. It will be remembered that a picture is not an uncut piece of celluloid, but a series of perhaps five hundred separate pieces of film, scenes and subscenes, fastened together to form an entirety. These scenes may differ greatly in their lighting values. For each scene a "light test" is made. On this strip are thirty "frames," or separate pictures, each of the same image. Each frame has been printed at a different gradation of light. The frames are very dark at the bottom of the test strip and very light at the top. The laboratory superintendent selects by number the frame which gives the best light values. Naturally he would choose a different number for a moonlight scene from one he would use for a scene taken in the glare of a Sahara sun.

Therefore, in the printing machines there must be means for changing light values between scenes. In "hand printers" an operator changes the light values by hand as the scenes pass through his machine. In mechanical printers these light changes are brought about by a clever, patented automatic device.

In both types of printers the actual operation is the same. The machines are in semidark rooms, illuminated only by one or two amber globes. "Positive stock" is comparatively insensitive to amber light. The developed negative, recognized by its dark color, is on one reel. The fresh, yellow, positive "raw stock" is on another. The two films run, emulsion side to emulsion side, (emulsion is the name for chemical coating on a celluloid base which, acted on by light and chemicals, eventually produces the final pictured image) over an aperture. Here a light is passed through the negative on to the positive, which is thus sensitized in exactly the same light and shadow proportions as the original negative was sensitized when the camera shutter opened and permitted light to shine through to it.

In the printing room two negatives become one positive. In common studio practice the sound track and the picture are photographed on separate films. When the picture is photographed on the stages, a blank place one eighth of an inch in width is left at the right side. Since positive prints such as those used in theatres have sound and sight on the piece of film, in order to make a release print for exhibition purposes, the separate sound track is merged with the picture in the printing machines to make a single unit.

There are "wrinkles" in all trades. One of the latest of these, from the laboratory standpoint, is called "turbulation development." Laboratory superintendents found themselves puzzled by occasional inexplicable variations in development quality, for feet of perfect film would be followed by other feet, dull and lifeless. The solution, when found, was quite simple. Because of capillary attraction all of the old developer could not be removed from the tanks as fresh fluid flowed in, and some, by the same attraction, would be held to the surface of the film. Being old, this fluid developed the film improperly. Today by use of a giant egg-beater, developer is thrown violently against the film, preventing such unwanted adhesions.

One day, it seems, a laboratory technician wanted to have a piece of film by which he could test the quality of developing fluid. He picked the discarded close-up negative of a blond girl. The girl was "Susy." Now, nearly a quarter of a century later, every hour a positive print is made of an eight-inch strip showing a number of frames of Susy's face. One print is made for every developing machine in use, and the changes in fluid quality are determined by this method.

By all odds, more millions of feet of film showing the face of Susy have been developed than that of any star who has ever lived. And yet Susy never was a star although she did act once in a tiny "bit." But years ago she dropped out of pictures and today no one knows where she is. She may be dead, or she may be very fat, and have eleven children. While Susy's own cinematic ambitions fell by the wayside, her destiny has

been to insure perfect photographic reproductions of all the handsome men and beautiful women who have risen to screen fame in the intervening years.

After the positive print has been printed and developed, it is inspected for both sound and photographic quality. This testing has interesting human values. In one studio, for example, there are eleven girl inspectors for photographic values. This gives each girl about twenty-four prints of each picture to project in a closet-like room which has a small screen at its further end.

Despite the fact that each girl sees every photoplay twenty-four times, she can scarcely wait until that film comes to her neighborhood theatre, for she never hears what the players are saying. Her curiosity in this regard is piqued by the visual repetition of the pictured scenes. Sound recording is checked separately in the sound department.

The extreme efforts of the picture producers to give the best quality possible is illustrated by these inspections. The percentage of error in development quality found by the picture inspector is less than one per cent, and yet an elaborate checking system is maintained to eliminate this very small margin.

In some laboratories the film now goes to a film treating machine where a chemical coating is put on the emulsion side of the film for protection against wear. Practically all laboratories wax the sprocket edges of the film. This lubricant permits a smooth passage of the film through the projection machines.

At last the finished film comes to the shipping room where each reel is packed in a separate round metal

container. Then eight or more reels, comprising a completed picture, are packed in a wooden or fiberboard box. These boxes go by train, plane, and ship to all parts of the world, there to entertain or to instruct, or to accomplish both functions at the same time.

It will be recalled that the start of the whole film-making process was the search for and the purchase of a vivid, striking story, filled with interesting human values. At last that story has become a filmed reality. The values it originally had have been interpreted by competent actors playing before constructed settings. The reality of this photoplay, as it physically sits there on the table of the shipping room, is not impressive. It is a wooden box which looks as if it might contain twenty cans of tomatoes. But take out the reels of film in that box and feed them into the projection machine of a theatre. Your story takes life, and characters which were merely so many printed words when the story was bought six months before, walk, run, and dance, live, love, and die before your eyes.

In such progression lies the marvel of modern motion picture making; the thing that has grown from the peep show to the modern air-cooled theatre.

It is a far cry from the cheap "chase films" of thirty years ago to the finely planned theatres of today, and photoplay productions of such quality, literary value, and good taste as *Little Women*, *Sequoia*, *David Copperfield*, *Quo Vadis*, *Ben-Hur*, *Winterset*, *The Informer*, *Romeo and Juliet*, *Anthony Adverse*, *Captains Courageous*, *Lives of a Bengal Lancer*, *A Tale of Two Cities*, *Clive of India*, *Rembrandt*, and *Lloyds of London*.

24

SOCIAL INFLUENCES

Once, in an address made by Cecil B. DeMille, he labeled the motion picture the greatest medium which the world has had placed in its hands for effective use to banish war and to bring peace. He described the possibility of a native of a foreign country coming from a motion picture theatre with his wife and four children, to find a fanatic urging war against the United States. The foreigner listened thoughtfully for a while. In the theatre in which he had spent the last two hours, he had seen a fine picture showing a tender story of American family life.

During his diatribe, the fanatic, perhaps, charges United States soldiers with impaling little babies on pitchforks. At that remark up steps our hero. "No," he says, "You're wrong. I've just seen those Americans. They are not devils with horns, but men with families, just like myself."

The remark illustrates the remarkable communication power of the cinema, a power all the more strong because it is visual. We shall always be able to understand our fellow men better when we see them.

In many ways motion pictures have exerted a strong influence on national life and customs. Other factors also enter, undoubtedly, but the one-time familiar

crudity of eating with the knife or "sword-swallowing" in slang parlance, has practically disappeared during a period of time parallel to the greatest growth of the motion picture. Likewise the motion picture has eliminated the word "hick" from our vocabulary. Once that term was used in derision to denominate someone from the country wearing outmoded attire. Today newsreels and feature pictures make it possible for a sensitive country woman, living far from the railroad, to appear in a large city without the slightest fear that her clothes may seem out of place or peculiar.

It is related that the Duke of Windsor, when Prince of Wales, left England on a fast steamer bound for Canada and his ranch near Calgary, Alberta. His journey included official welcoming stopovers at Quebec, Montreal, Toronto, Ottawa, and Winnipeg. He required a little more than four weeks to reach the remote prairie railroad station of High River.

When he alighted from the train, his first glance fell upon a man wearing a suit almost the exact duplicate of one he had worn when photographed as he left London. Six men on the platform had little feathers in their hats, another style just started by him and chronicled in the newsreels.

Annually some five millions of solid color shirts are sold in this country alone. In 1915 solid color shirts were a drug on the markets. In the studios, however, such shirts were making their appearance because both camera lenses and camera film were far from their present perfection. The film of that time was not accurate in translating color values into black and white.

Solid whites never photographed as white. Instead, they came out on the screen gray or streaked. Photography then could make a new white dress shirt look as though it had been a parade ground for a battalion of cats with dirty feet.

On the other hand, light blues, light creams, light yellows, or light pinks gave a perfect white. In those days one could never tell when a dark shade of blue would photograph white or black. In the center of the shading arc there was an indeterminate place where a white or a black result might depend on lighting or on the whim of the particular emulsion on that particular piece of film. Because light color tints were giving a better photographic white, actors began to dye their white shirts.

One day the late John Gilbert, then the greatest of the matinee idols, had to go from a working stage directly to an afternoon social affair without having had time to change his clothes. He wore a shirt dyed blue. Within two years, the vogue was international. Since then the sale of colored shirts has vastly increased and they have become an accepted style.

Today with the new "panchromatic" (color sensitive) film, colored shirts are no longer worn by picture actors before cameras. The new film has perfect photographic values for pure white. But many a young leading man, without being conscious of the part played in his choice by an actor of an earlier time, goes to his dressing room, removes the white shirt he has worn before the cameras, and puts on a colored shirt to wear on the street.

Some years ago Greta Garbo appeared in a picture called *Love*. At that time no woman would have thought of wearing a hat which completely concealed her hair. Garbo wore such a hat. This was the forerunner of the close-fitting hat vogue which still exists in a modified form.

And then there was the puffed sleeve vogue. Before these sleeves became popular, style experts literally hooted at Adrian, noted designer. Two years previously, he had predicted that soon every woman in America would be wearing this type of sleeve. In the Plaza Hotel in New York he told this to the editor of a great fashion magazine. This editor returned to her office and wrote sarcastically of the "impudent pretensions" of studio gown designers.

A year later Adrian returned to New York. In the meantime, Joan Crawford had appeared in *Letty Lynton*, wearing puffed sleeves. Adrian took the same hotel suite he had previously occupied, and asked the editor who had once scoffed at his ideas to come to see him. When she arrived he led her to a window, and asked her to count the number of puffed sleeves she saw below on Fifth Avenue. The editor was sporting enough to give him a correct count of forty-nine.

The evidence is too great for anyone to doubt that pictures have a definite effect on the feminine fashions of the world.

Adrian says, "Personally I feel that this is an excellent trend. There is a certain amount of fashion consciousness born in every woman but often she is puzzled as to what to do about it. There are so many paths

she can take. And frequently preoccupations keep her from studying clothes closely enough to know exactly what is best for her.

"But she can see a picture which stars a woman of her type. Let us assume that she is the general size and coloration of Joan Crawford. She sees carefully made clothes on which many hours of thought have been expended. She sees perfect accessories to go with these clothes. She can sit back in her chair and make an easy decision as to how that sort of grooming might suit her.

"As a whole, I think it can be safely said that American women have never been better dressed than they are today. Certainly average feminine grooming is far above what it was five years ago. It is my opinion that the films may take a goodly portion of the credit for this fact."

Recently the author addressed three hundred students at a college. Fifty-three girls of those present wore the attractive coiffure of Norma Shearer in her characterization of "Juliet." Miss Shearer, in her turn, had adopted the hairdress from one appearing in a Renaissance fresco by Fra Angelico.

Appearances of stars in costumes of ancient days have brought into style many modes which might not otherwise have been revived. Motion pictures are undoubtedly responsible for the touches from the nineteenth, eighteenth, seventeenth, sixteenth, and even fifteenth centuries one sees in the dresses of women of today. A certain bodice line worn by Katharine Hepburn as Mary of Scotland has appeared on many current evening dresses. *Romeo and Juliet* is credited

with having brought about the Renaissance line, with high waists, puffed sleeves, beaded fabrics, and coats that swing from the shoulder to the floor.

But the visible influence of the motion picture is not at all limited to dress. Its effect on interior decoration and architecture has also been extensive.

Years ago a government commercial representative told the author the following incident. It is a tale about the ruler of a remote Himalaya mountain state who once came to Delhi, India. There he saw his first motion picture in which was shown a typical American home. The Asiatic ruler understood but little of the action, but one thing did strike his attention. He was fascinated by a scene in which a man was shown reading a book under a bridge lamp. He returned to his mountains. A few months later an order from him for a bridge lamp was brought to Delhi by a pack train, the members of which had dared death to come through the snow-piled, wintry mountain passes.

When it was explained that the lamp was powered by electricity, which was not available in his province, the ruler ordered a portable generating set. This generator and lamp were laboriously carted back through the snows to the castle of the ruler, located three miles above sea level. Both of these objects were unknown to the ruler before he had seen a motion picture. The communicative value of the film has far-reaching implications.

The cry sometimes heard from foreign countries that "American movies are Americanizing our people" is perhaps the greatest proof of the effect of the motion

picture on tastes and customs. It is suggested that this complaint is sometimes generated by foreign business firms because American motion pictures are believed to create interest in attractive American-made products.

It was suggested in the discussion of settings that the motion picture is responsible for raising the average level of taste used in furnishing American homes. Various modifications of the "modernistic" trend in furniture are currently in vogue. Many interior decorators credit the start of this vogue to the film studio art director who first dared to offer in motion pictures a background in the modernistic mood.

This director said, "I made this first modernistic set, not with the idea of starting a fad, but because modernism is based on simplicity. Any method of interior decoration which decreases the number of objects to be photographed would naturally be valuable in a pictorial medium. People saw the advantage of fewer pieces of furniture and less bric-a-brac. The result is that today, while we have passed out of the extreme phase of modernism, we have retained its virtue of simplicity, first brought to the world's attention, on a mass scale, through the motion picture."

One art director suggests that the motion picture has aided and influenced the making of a more beautiful American home because it has never obviously set out to attain this end. It was long ago proven that for commercial entertainment purposes propaganda must be avoided. Therefore, motion pictures show, without editorial comment, attractive people amid attractive objects. There are many perfectly chosen objects of art

in properly made motion pictures. A prospective home owner who sees a photoplay has a variety of examples, chosen by highly paid experts, which may influence his own selections.

In one picture, the setting consisted of a very lovely modified English style farmhouse. Six interior rooms were presented. The front exterior was shown and a quarter-acre of gardens. In one corner of the garden was a doll's house large enough for small children to enter. The studio which made this picture received nearly one hundred requests for the plans of the doll house, and the plans of the main home were solicited by the president of one of the largest automobile manufacturing companies in America. He reproduced this house to scale as a lodge on his eastern country estate.

There may be questions of controversy about the relative values of stories offered in motion picture form. Previously we have suggested that the photoplay, a commercial product, offered to a mass audience, the individual tastes of which are not always of the highest, has done a commendable job of ordering its own house. Even if ways are found to advance the present methods of story regulation, it is doubtful if all can be pleased. There will always be persons who will not agree with some of the plot presentations in film theatres.

But on the question of motion picture influence on manners and customs, one finds few if any dissenting voices. Great architects, great gown designers, and great interior decorators are highly sensitive artists. They seek even in a comparatively trivial story to make sure

that the work which represents them is work at the very peak of their art. And because the motion picture studios have been able to pay well for superior services, many of the most successful men and women in the lines mentioned have been attracted to film-making. This has given the theatregoers of the world, for the expenditure of a very small admission fee, the home-planning advice, by indirection, of undisputed leaders.

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THE SHORT SUBJECT

THE SHORT SUBJECT, a picture presentation in one or two reels, is a branch of film production too often overlooked by the public. Yet, in the United States about one thousand short subjects are produced each year. This is nearly double the number of feature pictures made during the same period.

Moreover, short subjects, because of their wide range of topics, are much closer to the educational function of films than eight or ten reel feature pictures. These are almost without exception, "story films." They tell a fiction story and are designed primarily for entertainment. When they concern a historical character like Disraeli, or faithfully reproduce great literary classics like *Romeo and Juliet* or *David Copperfield*, they attain direct educational significance. But the educational value of modern stories is largely indirect and by example.

Since the short subject rarely depends upon plot for its strength factors, the fictional method is seldom used in its structure. The short subject keeps very close to the borderline between sheer entertainment and direct education. An example is the "narration short."

In this the subject is photographed without spoken sound. A narrator, speaking on a studio stage to a

microphone while the silent footage unrolls before him, makes comments or explanations. Commentators of this sort whose names are widely known include Pete Smith, Grantland Rice, Graham McNamee, Wilfred Lucas, Carey Wilson, Robert Benchley, Lowell Thomas, and Edwin C. Hill. A national magazine gave its highest rating of four stars to all the presentations of one of these commentators. They praised him for evenly balancing correct and educational statements on technical and semitechnical subjects and at the same time for creating interest which made them successful at the regular "pay as you enter" theatre.

A great deal of research preparation and study is required of a commentator. He must become expert in his knowledge of each subject under discussion. He must have a good voice, for he must be readily understood. Distinct enunciation, correct volume, and proper pitch give popularity to America's best radio speakers and motion picture commentators. Men who cannot speak correctly and effectively are obviously barred from this interesting new phase of forensics.

Localisms, colloquialisms, slang, and idioms must be carefully used and never to excess, although several commentators have developed a technique for making explanations clearer by couching their illustrations in idioms of the moment. This method needs careful handling to be effective.

The pictorial subjects discussed by the various commentators have been catholic. They include birds, bugs, astrology, telepathy, astronomy, horse breeding, history, paper manufacture, reforestation, costume designing, the

cutting of diamonds, directions to detect cheating at cards, the proper method to fly an airplane, the collection of raw rubber from trees, and the growing and roasting of coffee. The subjects are handled in authentic manner and made clear by illustrations familiar to the listener.

One short subject, with highly comic but scientifically accurate comments by Pete Smith, is credited by many economists with having halted the economically dangerous "dime chain letters." With pictures of human players, with graphic pictorial charts, and with his clever, accurate remarks, Smith explained pictorially and verbally the ridiculous nature of the whole plan. Until this short subject came out, no amount of printed expositions had been able to check the progress of the evil.

The success of the "narration" short subject led to an abrupt change in the handling of newsreels, for it was early seen that pictured news was more acceptable when explained verbally. Newsreels are standard in every film theatre. No showman, even in those states where two big features are offered at a single performance, would think of presenting a program without a newsreel. In the larger cities there are theatres which run nothing else. The importance of the newsreel and its cameraman cannot be questioned, but the newsreel, even after the coming of sound, used written explanatory titles. The "narration" short subject soon demonstrated the superior value of presenting background information orally.

The newsreel goes everywhere. Many feel that it is

important among the influences which will some day end war, for war appears more horrible when we actually see men killed before our eyes. And nowadays with transatlantic Zeppelins and transpacific airplanes, a king can be crowned in London on a Monday, and the exact manner of his coronation witnessed by theatre audiences in New York on the following Friday.

The time may come when people going to their work in the morning may stop by a theatre in order to see the daily news. When we consider that wire transmission of photography brings us pictures of world events within a few hours of their occurrence, that airplanes transport films within a few hours after their development, we realize that the motion picture must be considered of great importance as a means of communication.

Years ago the rulers of vast empires and the generals of great armies depended on messengers who ran afoot or on horse. In ancient Egypt the natives recorded their history on clay or stone, not unlike the natives of ancient Mexico. But through the ages, man has learned the value of a knowledge of events as they occur. And through the centuries he has mastered the means to acquire this news. Just as the development of the film industry is a biography of genius, so also is the development of communication. Yet the most amazing of discoveries related to communication were made in the last century. What the coming years may bring one hesitates to say. The possibilities of the newsreel, linked to perfected television, are almost staggering in their social implications.

The newsreel makes an important challenge to the written encyclopedia. Every studio maintains a "film library" and in one of these libraries there are now sixty million feet of film. About half of this footage comes from newsreels. The rest was gathered during the making of location pictures throughout the United States and the world.

Most film libraries start with newsreels of the San Francisco earthquake and fire in 1906, but some have footage ten years or more earlier than that time. For research on customs and manners from 1906 through today, it is practically unnecessary for any film producer to refer to a printed encyclopedia. His film library furnishes him adequate pictorial examples and in more vivid form, for these are not still photographs. People sit, stand, eat, dress, and walk in the exact manner of the period.

When the king of a large Latin country abdicated, one studio considered making a picture based on his life. Its film library assembled sixty reels covering twenty-five years of the monarch's career. His boyhood and all other public incidents, including three dramatic attempts at assassination, were portrayed. Another sixty reels on Charles Lindbergh will be of priceless value to aviation students a thousand years from now, for these reels offer a graphic pictorial record which is at once available, easily studied, and absolutely correct.

Because it has put film apparatus to physical tests far beyond those which would come in normal studio operation, the newsreel has also been of scientific value to the

film industry as a whole. Many corrections were made in cameras and in celluloid film formulas as a result of the months spent in the incredible cold of the South Pole by two newsreel cameramen with Admiral Byrd. Many scientists who may never go on such an expedition can study the South Pole terrain leisurely and check their own conclusions by important visual data, gained through such pictures.

A Servant of the People is a short subject illustrative of the effective film use which can be made of important historical facts. The picture is a short cinematic history of the writing of the Constitution of the United States. It supplements written texts in a significant manner. History students may now see the signers of the Constitution come to life, hear them debating each clause of the document, and hear the personal and human side of the States' rights controversy.

It is evident that the motion picture is, in films like this, indicating an approach to a new method of teaching history, a method which will greatly vitalize the subject. It is essential that significant basic material will always be found in books and records, but the time is at hand when the camera can and will supply valuable supplementary material. A photographic record of a president's campaign speeches, his inauguration, his various accomplishments and failures, would aid in making the United States history of the future more clearly intelligible to our citizens.

More and more the cinema is opening new doors. Geography, natural science, and geology have gained new appeal values when discussed in the pictorial form.

The short subject of today is produced for theatrical use. Its aim is primarily entertainment; secondarily, education. It points a way, however, for those who dream of a day when every grammar school, high school, and college will be equipped with talking picture apparatus. The simple psychological devices through which the commercial producer gains attention for his short films might well be studied by those who hope to make successful educational pictures. The theatre operator calls such devices "showmanship."

While a direct editorial influence is not in the province of the entertainment film as such, the short subject does take its part in factual discussions important to an aroused public. An example is the *Crime Doesn't Pay* series of short subjects which show that law violations bring certain punishment, whether they be small traffic violations, or kidnaping, or safecracking. These particular factual shorts were made with the aid and co-operation of Federal, state, and city police and detective departments.

The film cartoon has had an outstanding and decidedly deserved success. It has largely supplanted the older short comedy made with human actors, for the mechanical basis of the screen cartoon permits comedy effects not possible with human players. In a cartoon which made a villain of a big brown bear, the bear reaches into a hollow tree and eats a supply of honey. The head bee, dressed like a general, is seen conferring with his staff. An order is given. Bees by the thousands appear from everywhere. They form into a sharp thin "V" which shoots upward and then descends with the

sound of a thousand diving airplanes, striking a tender portion of the bear's anatomy. This is a scene which delights the children.

The perfected colored cartoon technique of Walt Disney, Harman-Ising, Mintz, Schlessinger, and Fleischer is one of the most fascinating high lights in an industry particularly notable for its varied technical advances. And because the mechanical march of the cartoon permits exact timing with music, music is even more important in a cartoon than a feature photoplay studio. In fact, in the finished cartoon script the narration of the story is on one half of each page, while opposite it is the accompanying musical score.

The choice of a story starts the work on a cartoon. After this is chosen by the staff writers, artists are called in to make colorful paintings of the backgrounds required.

Then each sequence is first drawn by specially trained artists, called animators. Suppose the sequence requires one little dog to push another little dog away from a pan of milk. This might take twenty drawings, or a hundred, depending upon the movements. The average cartoon comedy requires twenty thousand individual drawings. One man working entirely by himself could not make a cartoon in less than four hundred days. These drawings are first made by pencil; then the animator puts the sequence together, and with his thumb, flips rapidly through the file. This rough test discovers faults in the action. This gives the same illusion of movement secured by Muybridge with the consecutive photographs of a running horse that he made for Senator

Stanford in 1877, thereby opening the way for the present form of motion picture.

The action having been proved with pencil sketches, ink drawings are made on rectangular pieces of celluloid, called "cells." These cells are placed over the painted background of the scene, with a strong light shining from beneath. One cell is drawn for each frame of the picture. When these black ink cells are completed they are assembled and photographed, one by one, against the background. Then producers view this black and white version and order any corrections which are necessary for good workmanship.

All corrections having been made, the cells go to the color room. There the head color artist marks different numbers on the various cells to indicate the shades and tints which will be used. They are then given to scores of girls who color them according to the indicated numbers. The next process is to hold each finished cell before the proper background while the camera photographs one separate cell for each frame of the film.

The picture next goes to a sound stage, on which musicians and singers provide music "by the numbers." Unless someone has made a mistake in arithmetic, there is no possibility of a cartoon dancer being out of step. The individual numbers of the drawings correspond exactly to the musical score. The creation of cartoons is complicated, but it would be easier to deprive people of their dinners than to deny them their cartoons, for these have become a fixed part of the motion picture program.

Travelogues are cousins of the newsreel. They, too, are contributing their part to bring about eventual world peace by replacing exaggerated written opinion with actual pictures of people, places, and events. The monthly news review film is related to the newsreel. It permits a dramatization of events not possible to its day-by-day cousin.

The careful observer of photoplay construction is aware of the contribution made by the finest commercial short subjects. They afford the basis upon which strictly educational films will be constructed in the future. They possess a realism which proves truth stranger than fiction, and a dynamic, unique power which excites the imagination in a manner strongly supplemental to the effect of the written word. Few, if any, single aspects of the motion picture offer a more universal appeal than ably filmed short subjects.

To repeat a statement made at the start of this chapter, because it is not bound so tightly with fictional entertainment methods as the "full length" feature photoplay is, the short subject has been able to experiment more boldly than its longer brother. In films of undoubted educational import, it has proven that there is no real barrier between the field of entertainment and that of education. By gaining great success with historical and semiscientific subjects before persons who paid their way into theatres to be amused rather than to be educated, it has shown that entertainment and education are not at two separate poles.

It is all a matter of the presentation of interest values. Shakespeare is still a delight to lovers of reading and

his plays are standard in every college. And yet we cannot even remember half a dozen playwrights who in his day were considered the equal of Shakespeare. But Shakespeare, while writing greatly, also wrote entertainingly. The lesson that educational material gains effective force when it is presented with maximum interest appeal, is one that the educational film of the future may well take from the present-day short subject.

26

IN HOME AND SCHOOL

HOME MOTION PICTURES and the educational films have had a parallel growth. This has been true because cameras and projectors of the sixteen, nine, and eight millimetre sizes are very much less expensive than the standard thirty-five millimetre variety used in studios and by the newsreels. The smaller equipment may now be secured for a price within the reach of individuals and schools.

The enthusiasm of many of the thousands of teachers currently giving instruction in visual education had its birth in personal "home movie" experiments. It is not the intention of the author to advise possible home motion picture addicts what cameras to buy, or how to operate them. The various companies making such cameras all print excellent brochures on the subject. It should be said, however, that no motion picture camera or projector can ever be considered in the "toy" classification.

The cost of the home movie hobby, while much reduced in the past few years, will always be much more than that required of ordinary still photography. The home movie camera is a delicate device. It is more complicated and more intricately machined than a "still" camera, and if carelessly handled it will produce medi-

ocre results. To operate a camera correctly, one needs as a prerequisite a deep, sincere interest in the difficult but satisfying art of motion photography. From this will arise desire to study and to become skilful.

Professional motion picture cameramen spend at least six hours a week reading the latest scientific bulletins on photography in order to keep up with the remarkable day-by-day advance in lens and film reproductive quality. But an amateur need not study so intently, although he should be familiar with the basic books on photography. Cultural hobbies of this sort bring pleasure only in proportion to the study, effort, and interest which goes into them.

The amateur finds his greatest difficulty in his inability to judge light values. This becomes intuitive in a professional. An amateur cannot expect to get this sixth sense for years. For him, there are mechanical "light meters" and printed "light tables." Used intelligently, these will bring good photographic results. But photography is like any other craft; those with a natural aptitude for it will develop more rapidly than others.

Care of his camera is second nature to a professional. He realizes that all machinery must be carefully protected and used carefully. Amateurs frequently err in this respect. On shipboard 16 mm. cameras have been seen in deck chairs where they are exposed to the sea air for hours, and amateurs have been known to bang expensive home movie cameras against posts and walls.

Home movie cameras often have signs of rust in the lens mounting. This shows that the lens has not been

removed and cleaned. No professional would think of storing his camera at night without removing and wiping each movable part. Makers of home movie equipment try to make it foolproof, but finely built cameras and projectors should be kept from persons who will not give them reasonable care.

Fifty years from now, the home movie will be a vital and established source of new motion picture directors and cameramen. The author predicts further that within a quarter of a century no school or college will consider itself well equipped without at least a hundred 16 mm. cameras. These will be loaned to stu-

Type of Projectors	In Elementary and High Schools	In Colleges	Total
16 mm. Sound	675	300	975
35 mm. Sound	400	300	700
Total Sound Projectors	1075	600	1675
16 mm. Silent	9000	1000	10000
35 mm. Silent	4500	200	4700
Total Silent Projectors	13500	1200	14700
Total All Projectors	14575	1800	16375

Figures supplied early in 1937 by the Office of Education, United States Department of the Interior.

dents taking specific laboratory and field courses in motion photography. Except in one or two experimental schools in the progressive group such courses are not available today.

Almost every modern school today has huge lathes to teach boys to repair automobiles. Is it not equally logical that schools should make easily accessible the most important tool of one of America's largest industries? Some advance has been made in the use of projectors in schools. This indicates that the educators of the country are becoming more and more aware of the methods which motion pictures make available to them. The approximate number of projectors in American schools and colleges is shown in the table on page 258.

Analysis of the figures in the table on page 258 affords the following conclusions:

1. The small number of sound projectors now available will delay general visual education by talking pictures for many years.

2. There are sufficient silent projectors of both the 35 mm. and 16 mm. size to make possible limited nation-wide visual education in that form.

3. With ten thousand 16 mm. silent projectors and forty-five hundred 35 mm. projectors, it is imperative that silent educational films be printed in both sizes.

The educational film situation is not definitely established at present. To put it mildly, it is in a state of flux.

There are many concerns and organizations issuing educational films of more or less merit. An available standard guide for teachers in visual education lists sixteen hundred films by subject. A very extensive survey by The American Council on Education isolated approximately seven thousand films which might remotely be given an "educational" designation. But most of these are described as "low in educational content and hopelessly out of date."

A national distribution system, sufficiently sound and large to render making of educational films a safe financial venture, does not exist. Many of the films offered for "educational" purposes have been made and are offered gratis by companies manufacturing various products, or by social, governmental, or religious organizations.

Circular Number 150, *Sources of Educational Films and Equipment* published in July, 1936 by the Office of Education, United States Department of the Interior, lists as distributors of educational films forty-one commercial concerns, ten museums, twenty-six universities, eight religious organizations, and twelve government offices. Other sources reveal that a tire company offers thirty-five films to educators. One electrical equipment company has thirty-three subjects for elementary schools and thirty-five advanced technical films. The catalogue of one distribution concern offers subjects like *Mechanisms of Breathing*, *Body Defenses against Disease*, *Molecular Theory of Matter*, *Study of Infant Behavior*, *Distribution and Assimilation of Foods*, *Plant Growth*, and *The House Fly*. These subjects, chosen

Cutter inspects several takes from the trial scene of *Parnell*. These scenes are kept in cans and spliced into the film in proper sequence.

Canned romance. Containers of talking pictures when ready to be shipped from studios to all parts of the world.

at random, indicate that educators have been giving careful thought to the possibilities moving pictures offer them.

Russia produces almost as many films as the United States, but comparatively few of them are talking pictures. Only a fraction are destined for purely entertainment usage. The U.S.S.R. uses the silent film projected from portable traveling projectors mounted on trucks to bring quick education to its more remote provinces.

Apparently, the greatest immediate barrier of educational films is in the field of distribution. Conditions would be better, undoubtedly, if there were fewer and larger distribution outlets, and if all major outlets had a standard policy. As it is now, some concerns offering films lend them free of charge. Comparatively few rent them in the customary manner of the commercial field. Most of the companies making a business of educational footage demand that the schools buy the prints outright. Unless they are supported by some heavily financed foundation, free films will always be tinged with the suspicion of editorial influence. Some choice will eventually have to be made between sales and rental of educational films. It is hoped that the schools will at an early day work out satisfactory plans for giving boys and girls the privilege of having talking pictures.

Walter Evans, expert in the use of 16 mm. film for classroom use, offers these valuable suggestions to those schools that are using educational films or to those that are eager to use them.

"Two developments in the field of educational films

deserve special comment. The first is the development of sound on film in 16 mm. size pictures; and the development of apparatus that is light, portable, and practical for the school to use in projecting sound pictures in their auditoriums and classrooms.

"It would be well to keep in mind one vital point. If a motion picture is to be produced for general distribution in the schools, it should be "shot" on 35 mm. standard equipment and reduced to 16 mm. in the print. This is quite necessary because it is not yet possible to get all the professional effects and results from original 16 mm. production, such as the addition of the sound track to the film and other laboratory effects which are only possible when working with a 35 mm. negative. Of course, since the vast majority of equipment now in the schools is 16 mm., it is necessary that the print be on the 16 mm. size. If, however, a film is being taken just as a record of the school activities, and no distribution is contemplated, a 16 mm. camera is recommended for the economy of this equipment and film.

"The use of a new color process is another development worthy of emphasis in any article dealing with educational film production. The perspective of this 16 mm. color process opens up the film of documentary recording of subjects in which color is inherent, in an authentic and yet simple manner."

The statement has been heard, "But the theatre movie and the educational film differ too greatly to have anything in common." They are different, but as we have said before, so are second cousins. They may not look alike but some of the same blood flows in their veins.

Makers and users of educational films will do well to pay due respect to the part played by the "theatre movie" in making possible the store of proved technical facts now available to educational films.

In addition to schools, many churches and clubs are now equipped with either 35 mm. or 16 mm. projectors. Accurate statistics are not available which reveal the number of projection machines in these two fields. Whatever has been said about the use of the educational film as a whole applies to these subdivisions.

A frequently overlooked phase of the problem is the Cinema Club. In at least a dozen universities a Cinema Club has taken its place with the standard stage dramatic clubs. These clubs are also organized in numbers of high schools. They make a study of motion picture reviews and frequently devote time to actual reviewing. They hold open forums for the members, and opinions pro and con are exchanged. Sometimes papers are read and books dealing with pictures are discussed. Comparison between stories as written and as filmed excites much interest.

These clubs also devote themselves to the experimental production of photoplays, just as the Mask and Wig Club of the University of Pennsylvania produces various stage dramas.

A typical club will divide its membership among several students so that each may execute one of several necessary duties. In this way the plan of a production unit is followed. The club starts out by possessing a 16 mm. camera. Several members will serve as cameramen; others will divide the work of the director, and

several will be property men. A number of members will write the scenario. The rest will act. In most cinema clubs the members supplement their information by interchanging individual technical duties with each production made.

A member of one college club said to the author, "Membership in a Cinema Club offers the Master's degree in the matter of photoplay appreciation. Until you have actually made a picture in such a club, you can never really know what an arduous task it is to bring about screen perfection."

Actual study and experimentation are values which cannot be underestimated. They lead to an experience which theory can never approximate. On a small scale, the work of cinema clubs approaches all of the bitter failure and the happy success which is a part of any artistic achievement. Mistakes are made and problems are solved. Young actors and actresses meet with approval and disapproval and young directors display inherent genius or plain stupidity. The Cinema Club is an excellent cog in the new machinery of Practical Education.

27

THE FILM ABROAD

THE INTERNATIONAL FIGURES on the photoplay are impressive. The world investment in studios and theatres is $2,650,000,000. To earn that sum at a salary of $2500 a year would take a man 1,060,000 years. It would provide very comfortable five-room houses costing $5,000 each to 530,000 persons. There is an estimated weekly world attendance upon commercially made photoplays of 220,000,000 people. If these photoplay attendants stood six feet apart number one would have his feet in Lake Michigan while the last looked out upon a sunset over the Pacific Ocean. Such comparisons to illustrate the Gargantuan size of the film industry could be indefinitely prolonged.

There are 52,175 talking picture theatres in the world. Of these 15,858 are in the United States.

There is one theatre in the United States for every 6,742 persons. There is one theatre in Europe for every 9,270 persons. There is one theatre in the world for every 20,716 persons. The motion picture showings in Europe, in number of theatres, are not far behind the United States. In production, however, the difference is great. America supplies 70 per cent of all the successful commercial motion pictures shown in theatres throughout the world.[1]

[1] Figures supplied by Association of Motion Picture Producers.

It is apparent that the international market is important for the American film producer. In fact the market, when in normal condition, is so profitable that some film makers count too greatly on it in estimating their probable income. While American theatre income is disturbed dangerously by economic depressions, the international market has periodically been unsettled, not only because of economic troubles, but from a number of other causes.

During the period of the silent film the foreign business of the film companies flourished, for there were no language barriers. Subtitles were easily translated into a score of languages. The coming of sound pictures upset this.

The first attempt to overcome language barriers led to the making of pictures with as many as six different casts, one for each language. At the beginning of this system practically every successful picture was made in French, German, and Spanish, but some pictures were made which included Italian, Swedish, and Portuguese. This did not prove successful. Audiences which had become accustomed to Greta Garbo in silent pictures, and liked her, were not quick to accept any other actress playing the Greta Garbo rôles, even though the other actress would use their own langauge.

Two new methods to overcome these problems were devised. The first method retains the English language sound track, but superimposes printed titles in the native tongue over the action of the picture. This mode is particularly popular in South America where many of the population know some English, but not enough to

grasp the meaning of a picture without written titles which use the native idioms. The other method keeps the familiar faces and actions of American stars, but substitutes a sound track in the native tongue prepared in the country concerned. This system is most popular in European countries. Both of these methods are used successfully.

The extent of the American participation in the foreign industry is shown by the figures of one company. This company serves more than one hundred and twenty-eight exchanges in forty-eight sovereign countries. These exchanges are privately managed and financed locally. They usually distribute films made within their own nation along with those they buy from American makers. A survey of reports from foreign exchanges again emphasizes that the film is a truly remarkable international medium of communication.

There seems to be no such thing as a specific appeal for any particular geographical division. A picture which is popular in one country will be popular the world over; subject to rare individual conditions, the entire civilized world reacts substantially the same to dramatic situations. Musical films often attain greater popularity outside the United States than within, because motion picture audiences in other lands are sometimes more keenly attuned to music.

This is also true of the art of pantomime. The great ability of Laurel and Hardy in voiceless gesture has made them even more popular abroad than they are in the United States. Americans are not so appreciative of pantomime as other nationals.

The native cultures of various countries have each developed characteristics distinctly their own. Italy is famous for its operas and concert singers. The German mind has turned largely to philosophical contributions. The genius of the English is often expressed best in their poetry. But all races and nationalities have a common interest in such emotions as love and ambition, and they react alike to these feelings. The international photoplay illustrates still further that honest, sincere art, as it reflects the life of human beings, is of the world as a whole. Universal art wherever found is never prisoned by national boundaries.

An example of a dramatic picture not suitable for the foreign market is *Murder on the Diamond*. This was a baseball story and too fundamentally American. On the other hand, *Ah Wilderness*, though dealing with American life, was very popular abroad because it tells the story of parents and their problems with growing boys and girls. A family theme has an international human denominator, understood in any country. One can understand why *Romeo and Juliet* has been played in more places in the world and in more languages than any play ever written, for stories of this sort have an inner international language of their own, the language of love.

If an actress or an actor becomes a star in America, his appearance, personality, and acting ability will be received with equal acclaim in the international field. But there are some exceptions to this. They rest with those instances in which the star's popularity is too largely based on strictly American characteristics.

American slang, a cowboy twang, complicated American colloquialisms, or a specialized dialect may lead to an unfavorable reception when they cannot be easily understood.

The dialectal peculiarities, however, of almost every section of importance in America have been made almost commonplace knowledge by the films. The speech of the New Englander, the New Yorker, the Southerner, and the Westerner has been used in talking pictures at one time or another. This has led to a finer understanding between the sections of our nation. It has made the literature of particular localities plainer than it was before the talking picture.

One outstanding difference is noted between player popularity here and abroad. In the international field, when an actor once becomes a public idol, audiences stay with him for a longer period. The more leisurely mode of life existing outside the United States brings a less constant demand for change. Stars, at least a dozen could be named, who have not been heard of in America for ten years, are still attracting large audiences abroad.

Theatres abroad are on the whole less advanced than those in the United States. Many of the newer theatres across the sea are air conditioned, have comfortable seats, and excellent means of projection and sound recording. The theatres of France, Germany, Russia, and Japan are frequently modernistic in architectual design.

In America the silent, or non-wired, non-sound-reproducing theatre has almost completely disappeared, but it remains very prevalent internationally. It has

been mentioned that there are thirty-six thousand sound motion picture theatres outside of the United States. The same international area has seventy thousand odd silent theatres.

American audiences prove that the film is truly an international art, for about one sixth of all films produced internationally reach the United States. They do not care where a film is made, providing its story, camera, and sound qualities are high. A case in point is *Be Mine Tonight*. This was a German-made musical presented in the English language. It featured Jan Kiepura, a star of whom few Americans had heard. Yet it filled more theatres than many American-made successes of the period. It offered a striking new technique in musical pictures and, since its importation, has been widely imitated.

American producers welcome the increasing interest shown by foreign countries in improving their native film production. The achievements of the American film industry have been great, but it is certain that, under the spur of adequate foreign competition, they will surpass their former triumphs.

America was the first country to enter the motion picture industry on a large scale, and other countries now engaged in it largely follow the methods devised here. There is no great country which does not have actual film production. There are several gigantic concerns in Japan, where films are exceedingly popular. There are studios in China, India, Australia, Russia, Czechoslovakia, Hungary, Austria, Spain, Italy, and Sweden, and there are many others elsewhere.

The international social effects of the motion picture industry have been great indeed. Few countries have not already felt its effects. Its rapid development indicates that it may become an even greater international factor. The motion pictures of tomorrow may directly aid the diplomatic relations between countries. If it is wisely handled, it may go as an informative messenger of peace, an apostle of beauty to every land. Also the motion picture brings to us a greater sympathy for those in other countries, a greater appreciation of their arts and customs, and an increased understanding of world events.

Foreign-made pictures in native language have not been widely exhibited in this country, for the obvious reason that Americans are generally distressingly poor linguists. But in the Canadian cities along the Great Lakes, one finds theatres which show French films to good patronage. In Montreal, French language pictures frequently outdraw those in English, and the theatres for French films are large and modern. In New Orleans likewise there has been a French film theatre.

In Los Angeles and San Diego, California, and at various points in Texas, Arizona, and New Mexico, one finds playhouses exclusively devoted to films in the Spanish language. In these cases, and in those of the French theatres, such focal points are maintained for French and Mexican people living in the vicinity. But they also provide a splendid opportunity for young Americans to study the two languages. Language teachers in the Los Angeles schools encourage their students to attend the Spanish theatre. It is their testi-

mony that such attendance is one of the quickest ways to build up adequate conversational facility in the language.

Progressive schools and colleges, in districts where exhibition of foreign language films is not common, are seeking the same goal by sponsoring the presentation of films in French, Italian, Spanish, and German in their local or campus theatres. There is no question that this procedure will grow in popularity and that eventually it may develop a large, special educational market for films in native tongues. Language teachers are in agreement that native idioms correctly spoken with excellent enunciation by trained native players, make a specially valuable impression upon the student. Teaching of languages by phonographic records has been a common supplementary method for years. Now by talking pictures the great value of *sight* can be added to this system of instruction.

28

THE ROAD AHEAD

PERHAPS THE FACTS given in this book have brought the thought, "Is there a place for me in this art industry? If I should enter it, what preliminary training should I need? What is the industry's future? Has it already reached its zenith, or is it destined to attain a still greater importance? What about comparatively new developments such as color photography, third dimension photography, and television? As they grow and develop will their effect on the industry as a whole be favorable or unfavorable? What opportunities will the expected expansion of the educational film and the home motion picture offer to workers in the industry?"

In its short life the film has caught up with its prophets many times. Therefore, we shall not make positive statements which new developments might make laughable within a year. Our intent is merely to call attention to possibilities and, by simple descriptions of the newer and less understood phases, to excite the imagination of the reader. This may bring about a more thorough study of things and forces capable of carrying the cinema to new mountain peaks, now veiled in the clouds.

It has been stated that growth is to be expected in the field of the educational film. This valuable growth has

been impeded in the past by a shortage of adequate projection equipment in the schools, and by conflicting, non-uniform plans of production and distribution. There is really no problem here except a lack of effective organization and financing. Some day these will be provided and when that time comes many new positions will be available, because producing organizations will be needed with staffs and equipment similar to those in present studios devoted to the entertainment film.

In its development color photography is not likely to increase production personnel, but its future is intriguing.

There is little question but that some day color photography will supplant black and white, but apparently that day is still in the distance. A present handicap of color for feature pictures is that it is somewhat unusual and it tends to distract attention from the story being told. Since any kind of photography is merely a way of portraying life, people must get used to it gradually as they did to black and white photography when it so largely supplanted paintings and etchings for certain purposes.

A scene is recalled in which a British officer in a red coat with gold epaulets was talking with a girl in a blue dress. With such strongly colored visual distractions it was difficult to concentrate on what the characters were saying. The most successful recent color picture is felt to have admitted this difficulty by its method of treatment. Sets and lighting and dresses were in subdued tones and there was but little color contrast, the tones

of the faces and eyes being predominant. Another difficulty in the way of the photography of nature's colors is that everyone knows exactly what these colors are and should be, and unconsciously makes comparisons of this kind.

This puts color photography to a tremendously difficult test, which it meets only to a comparative degree. It is the same kind of test to which recorded sound is put: does it sound like a real person? Colored cartoons have achieved their great and relatively easy success because they do not need to portray nature's colors, but these comparisons between nature and color cartoons cannot be wisely made.

A remark of this kind should by no means be considered disparaging to color; some day all pictures will be made in color. It has scored an amazing advance in fifteen years, and particularly in the last two or three.

In 1922 and 1923 the author was associated with the production of *The Ten Commandments*. A two-color process was used in this picture and others, as *The Vikings* and the *Black Pirate*. The blues were extremely blue and the reds were very red. It provided the novelty of color, but it was far from being true to nature.

But since that time there has been such progress as to make it evident that color photography will continue to approach full fidelity by improvement. By the time this goal has been reached, picture production will have increased its percentage of colored pictures in like proportion.

The number of color films, while still small compared to the total number made in black and white,

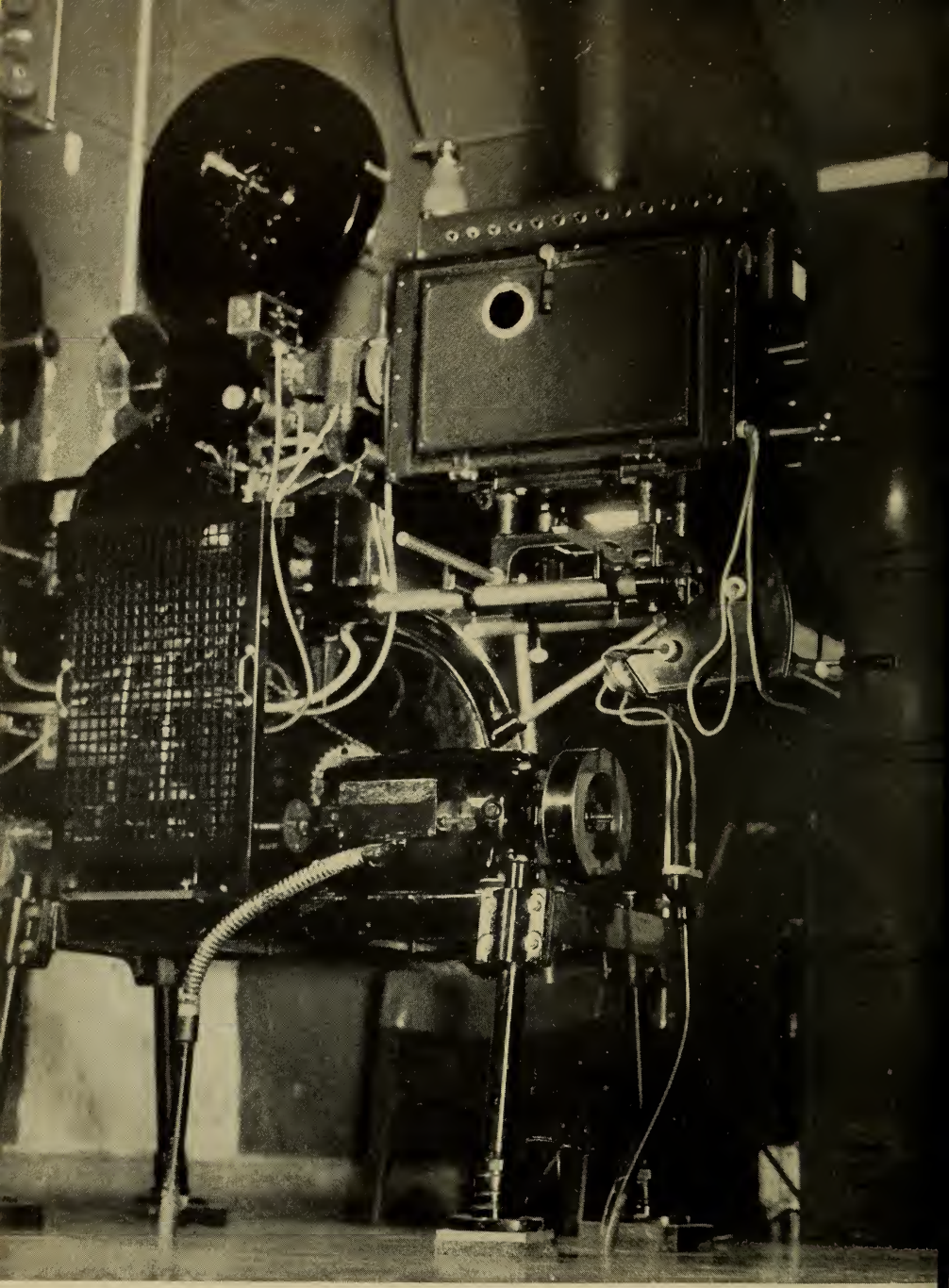
has already increased greatly. A factor which will aid the advance in use of color is a reduction in cost. It is still expensive to make and release a color picture.

Of the many color processes fully or partially developed, the most commercial and widely used method at the moment is one in which three separate negatives are used to record the three primary colors, blue, green, and red. The first type of camera employed for this process directed the light to the three films through a complicated system of prisms. The present set-up is simpler, though prisms are still needed.

Two of the films are now put in contact, face to face, and run through the camera together. The light passes into the camera through a single lens into a cubical prism very like that used in a Lummer-Brodhun photometer. This cube consists of two right angle prisms cemented together on their hypotenuse surfaces. Before cementing them together one cube is very thinly coated with metallic gold, but the coat is so thin that part of the light passes through it. As the light strikes this gold surface, part of the light is reflected at right angles and part passes straight on through.

The part which goes through the gold film has a greenish color, but a green glass is placed between the prism and the film. This prevents blue or red lights from striking the film, to which it is also sensitive. Therefore, this film photographs the green elements of the object. The remainder of the light is reflected through a magenta-colored glass, which permits the blue and red light to pass through, but which stops the green, to the pair of films in contact as described before.

A precision machinist repairs a camera part to 1-10,000th of an inch



Talking picture projection machine

The film next to the cube is exposed through its celluloid back to the blue light, and therefore photographs the blue elements of the object. There is a very thin yellow coating on this film, however, which prevents the blue light from passing through to the back film. Since this yellow layer permits the red light to pass, the back film photographs the red elements of the object.

These films are developed like ordinary camera negatives, but instead of ordinary prints being made from them, a process somewhat like lithography is used. The prints are really much more like little transparent billboard posters than ordinary photographs. To make these colored prints, an intermediate step is taken, comparable to preparing the lithography stones.

From each negative a "matrix" is made which will have the desired image raised in relief like a rubber stamp, but not nearly so high. Each of these matrices is then coated with a dye, complementary in color to that with which its negative was photographed. Then it is successively pressed against a clear film so prepared that it absorbs the dye as paper absorbs ink from a rubber stamp. In this way the matrices can be used over and over to make large numbers of prints. The matrices are aligned carefully so that each successive colored image is printed exactly on top of the other color or colors beneath it on the print.

Another effective color photographic system which is moving ahead with great rapidity, and which promises startling advances for the future, uses a film with three color sensitive emulsions, one on top of another. The top emulsion is sensitive only to blue light; the mid-

dle to green and blue; and the last to red and blue. A thin yellow coating under the top blue-sensitive emulsion prevents blue light from going through to the other two emulsions.

Light comes through a single lens without any intervening optical system of prisms and no filters are needed. Special cameras are not required. An excellent three-colored transparency is produced, but the disadvantages in this system, and those similar to it, lie in the fact that duplicate prints are difficult and rather costly to produce. But its utilization is so simple that when it reaches the final stage of development there can be no question as to the final worth of this method.

There are still other color processes, but space does not permit their presentation. It should be sufficient to say that the most successful methods prove conclusively that color is progressing out of the experimental laboratory. How soon will color be finally perfected? No one can safely answer that question. Edison certainly did not think that it would take nearly forty years to produce a practical talking picture, but it did. On the other hand, color has advanced so far during the last few years that its general commercial use may come very soon.

It is with fear and trembling that the author approaches the controversial subject of television. There are some enthusiasts who will tell you that television is here now, that its practical use in millions of American homes is to be expected "within two or three years." There are still others who feel that its present somewhat limited use cannot be extended until serious scientific

problems are solved. But because it has so stirred the minds and the imaginations of thousands, television stands by itself for popular interest in any discussions of the future of the motion picture. It is provocative and alluring and this book would not be complete without a simplified discussion of it.

Television in 1937 is still quite experimental, though it has been developed a great deal since the earliest public demonstrations. The best systems are now capable of producing an image about eight by ten inches, having details similar to a small newspaper photograph seen through a reading glass. The receivers used under these conditions cost several hundred dollars.

Under good conditions this image can be transmitted by very short wave radio for a distance of twenty to fifty miles. This is roughly the distance we could see if we stood where the transmitting apparatus is placed, usually on a hill or a high building. This is true because the very short radio waves behave very much as light rays behave. They do not bend around corners, or around the earth to the degree of the longer radio waves ordinarily used for broadcasting. The reason for using the very short radio waves rather than the longer ones will be clear as we see the method by which the image is transmitted.

The principle of television is neither mysterious nor new. It is merely an elaborate form of ordinary telegraphy, which, instead of being able to send only four or five hundred telegraph dots each minute, is capable of sending several million each second.

Imagine that we wish to transmit the contents of a

page of this book first by telegraph and then by television. To do this by telegraph each letter is methodically spelled out and if there are twenty-five hundred letters on each page it would require about twenty-five minutes per page. Now if it were possible to have a mechanical eye and brain capable of reading the entire page in a small fraction of a second, and transforming it into electrical impulses like rapid telegraph dots, we could send the contents of this page perhaps thirty times each second.

If these successive transmissions of the contents of the page could now be received, not by the ear of the receiving person, which is sensitive only to relatively few impulses per second, but by his eye, which is capable of perceiving the very large number of impulses each second of which visible light waves are composed, he might be able to understand what was sent over the telegraph just as well and perhaps more easily than if he were listening to the telegraph dots. For now he would be "seeing" the page not as a group of separate dots, but as though it were a half-tone photograph like those in newspapers. The eye blends the dots of which the image is composed together, and if there are a great many dots in the image the detail is fine and clear.

It is to secure fine detail that the television image must be broken up into as many tiny dots as possible. Of course this image would only last for one thirtieth of a second and it would make a very poor impression on the brain. If these images were to follow one another each one thirtieth of a second, the eye would see an apparently continuous picture of the page as though it

had been photographed in motion pictures and projected like them on a screen.

Let us watch a television eye "read" our page. It cannot read the words, as our eye reads them. It cannot even read individual letters all at once. (By "read" is meant to set up a series of electrical impulses which will reproduce the image of the letter in the receiver.) It must be done by a method similar to looking at the letter through a tiny hole which is being moved back and forth across the paper on which the letter is printed. This is done in a continuous succession of sweeps such as one would use in removing leaves from the sidewalk.

As it moves, at one moment one sees the white paper through the hole, and the next the black ink of the printing. The light reflected from the tiny hole then can be thrown on a photoelectric cell similar to that we have seen used in reproductions photographed on motion picture film. As the light through the hole varies, the electric current generated by the cell varies and the television signal is formed.

The little moving hole can be replaced, as in systems at present most popular, by a device known as an "iconoscope." In this device a tiny stream of invisible electricity sweeps or scans a picture thrown on a small screen by an ordinary camera lens—much as you would water the rows of flowers in your garden, one after another, with a hose. The screen consists of many tiny photoelectric cells, each of which develops electricty proportional to the light thrown upon it. These are connected to the transmitter, one after another, by the sweeping stream of electricity.

The cells which are exposed to much light, as from the white paper of our page, will release a large current impulse when swept by the stream, while the ones in the dark parts of the type will release only a small current, or none at all perhaps. Those in a part which is neither pure white nor pure black will release amounts of current in proportion to the light in which they lie, as described before.

Since the images usually sent by television are not all black and white, but of different intermediate shades, the television impulses are not all equally strong, as they are in a telegraph system. They are more like those in a telephone signal, in which the current varies in strength with the loudness of the voice sounds.

From this preceding description, we can also visualize the method used for transmitting photographs over telephone wires. It is quite similar, but, instead of sending the entire page in one thirtieth of a second, several minutes are required. Further, instead of being received by some device which makes the image immediately visible to the eye, it is received on a piece of photographic film. It is impracticable to send the picture faster than this over the telephone lines, for they can carry only about ten thousand impulses per second.

Instead of the letter being composed of merely four or five dots as in the telegraph, a television signal of that letter might require as many as fifty dots to define its form accurately. If we consider the image to be broken up into the tiny dots like a newspaper half tone, it would require approximately two electrical impulses to transmit each of the dots—one for the black dot and one for

the white beside it. It is easy to see that with twenty-five hundred letters and thirty images per second, several million "dots" or electrical impulses are required each second in a television system.

If the telegraph dot consists of a momentary burst of current, it can be seen that an ordinary alternating electrical current consists of a continuous series of such bursts, these being twice as many as the current has "cycles per second." Only about ten thousand impulses a second are required to produce speech quite well, so telephone lines are only made to carry that many. It costs a great deal to make the special circuits required to carry the millions of impulses needed for television, but a few have been constructed for experimental purposes.

Because of the nature of radio equipment it is necessary that the radio waves in use be composed of several—usually at least from five to ten—times as many impulses as the signal to be sent. Since the shortest radio broadcast waves themselves have only about three million impulses each second, they could not be expected easily to carry a television signal of about that same amount. As a result radio waves having about one hundred million impulses are used to carry a three million impulse signal.

It can be seen that if a broadcast transmitter can send for five hundred miles, and a television transmitter only fifty miles, a great many television transmitters would be needed for everyone in the country, as well as the cities, to see television programs as they now hear vocal broadcasts. In addition these transmitters and the neces-

sary receivers are more costly than the vocal sort. These factors, plus the small image, make it seem improbable to most observers that television will enjoy a wide use for some time to come.

Having transmitted this television signal as though it were a telephone or telegraph signal, it is now necessary to change it back from electricity into light. This might be done with a large number of tiny electric lamps lying beside each other like cells in a comb of honey.

If it were practical to connect each of these lights by a separate wire or radio set to the corresponding little photoelectric cell in the sending device, the image would then be formed in the pattern of these lights, without any other mechanism. This would require thousands of wires or radio sets, and hence it would be impractical.

It is necessary therefore to switch each light, one after another, to the receiver just at the exact speed and in the exact manner that the little photoelectric cells are switched to the transmitter. But for television so many thousands of lights would be required, one being like a single dot in a coarse newspaper illustration, that this use of individual lights is impracticable. Instead, in most of the modern systems, a device is used in the receiver which makes use of another tiny electrical stream. This is like the one in the sending apparatus, and it is caused to move in exactly the same manner or simultaneously with the one in the sending device.

This stream varies in strength as that of a hose when the valve is opened and closed. The valve for the electrical stream is the light thrown into the sending device by its lens. As this stream strikes a special kind of screen,

it causes the spot of the screen on which it strikes to glow visibly in proportion to the strength of the current. As the stream sweeps over the screen, it draws a reproduction of the image on the screen of the sending device. This image would be much like the one you would make if you were to draw a white pencil back and forth over a black paper, pushing hard on it where you wish the picture to be light, and very softly where you wish it to be dark.

The image painted by the electric stream is not very bright. It must ordinarily be observed on the screen itself in a darkened room. As a result the picture is small, for the largest screens of this type are at present only about eight by ten inches. Efforts are being made to make this image bright enough to enlarge with a lens on a screen like that in a motion picture theatre, but at present this is not easily accomplished and immediate success is not expected.

Static and noise in the radio cause jumps and spots in the received image, and it is very unusual at present to secure an image by this cathode ray or electrical stream method which can compare with that from a small home motion picture projector.

But as late as the summer of 1937, two opposing television camps were literally glaring at each other. One talked of cheap television sets in every American home within two years. The other was not so optimistic.

In such controversy there is plenty of fuel to start blazing fires in the minds of the young and the ambitious. It took forty years to bring the talking picture from the days of Edison's first dream. Who knows but

that tomorrow the solution to the problems of television may be found?

When it comes, it will bring great changes in its wake. Not many think today that it will affect the ingrown desire to go out of the house "to see a show." It is clear, however, that television is likely to change materially the manner in which newspapers, the radio, and the newsreel now distribute the news of the day. There is no doubt but that a New York television theatre, the first in the world, built to broadcast the World Series baseball games of the fall of 1937, indicates in a small way what we may expect from television in the future.

When television does come, there is a possibility of some rearrangement of workers now in older forms of communication activity, and naturally those who have had the forethought to prepare themselves for this certain change will be in most advantageous positions.

For those willing to wear special glasses stereoscopic photography has been solved. But except for novelty use, of which the very popular short subject, *Audioscopiks*, is an example, it seems quite certain that the method is not practical for general day-by-day entertainment use. People would forget their special glasses or, after a time, grow annoyed by the necessity of having to use them. And it is also certain that such a system would never be popular unless the theatre-owner furnished the glasses. For sanitary reasons, he would have to pass out new ones to each customer, and the expense of this might be prohibitive.

But the little film *Audioscopiks* does intrigue one with the possibilities it offers to that inventor who first dis-

covers a commercial method by which pictures with length, breadth, and thickness can be seen practically with the unaided eye. Experimental demonstrations of this kind have been made before small groups, but as yet are not practical for large theatres.

We know that in stereoscopic photography light is admitted to the camera through two lenses set apart at the distance between the average person's eyes. One of the images is dyed an orange, the other a blue-green. They are printed together on a single film, but the two images slightly overlap each other, a condition that results from the distance between the two lenses. With this method it is physically impossible to watch a projection with the naked eye. The flicker is abnormal and the two images superimposed produce an almost hopeless blur. The unaided eyes cannot stand the strain caused by this flicker for more than a few minutes.

Put before your eyes, however, a pair of spectacles with one orange lens and one blue-green lens and magically the blur disappears, and on comes the third dimension thickness. Each eye now sees the image it would have seen had it been in the place of the corresponding lenses of the camera. The scientific "why" of this is too complicated to be discussed here. But enough has been told, it is believed, to interest those alive to the possibilities of a future all-third-dimension cinema in reading the extensive literature which exists on third dimension photography. Long before the time of Edison, stereoscopic photography was the hobby of thousands of inventors, and the great problems introduced by a moving picture have only stimulated more intensive research.

These then—perfected color, perfected television, and perfected third dimension—are goals which loom invitingly before the eyes of the coming generations. These are achievements whose greatest fruition must await a genius who may be at this moment kicking his toes in a nursery crib, or running to a touchdown on some high school football field.

But all of us cannot be trail blazers. There is much to be done along already established lines. But it should not be inferred that ambitious persons should at once take trains, boats, or planes to reach the nearest film studios. The number of persons employed in all present film plants is so small compared to those who would like to be in this fascinating mixture of art and industry, that generally film makers urge job hunters to stay away unless they are sent for.

It is not in the studios of the present that the greatest chances will come, but in the greatly to be enlarged panorama which will encompass a larger future use of the cinema medium.

For adventurous young men who like to travel, there is certain to be exceptional opportunities in foreign countries in the field of sound reproducing—opportunities similar to those now enjoyed by questing young mining engineers. Nearly every theatre in the United States now has sound equipment, but in the world outside there are seventy thousand theatres which do not yet have sound reproducing devices. Development of the sound picture abroad is an alluring prospect.

And even in the United States there are great opportunities for the sound engineer in the educational field.

Out of 16,375 motion picture equipments we have in the schools of this country, there are only 1675 talking picture projectors, or less than 10 per cent of the whole. And there are thousands of schools which have no film projecting equipment, either silent or vocal.

Today a course in a good technical school, plus practical telephone or radio experience, provides valuable background for film sound engineering.

There are so few cameramen needed in the studios that the chance for an outsider to enter this present select circle is quite remote. New studio cinematographers are being developed by an approach to the old guild method, wherein a boy of sixteen would attach himself to a "master" or helper, doing menial work, cleaning and repairing and adjusting, until he gradually learned his trade. But when the educational film broadens, as it surely will, there will be many positions for trained motion photographers. Some of these are sure to come from men who have been amateur cameramen in high school or college cinema clubs, or youngsters who have carried a hobby to its furthest degree.

No rules, educational or otherwise, can be laid down for writers. The writing flame burns where it pleases. It may be found in the mind of an Oxford graduate or in the soul of a tramp. And it is already apparent that persons who can really write never need seek the studios. The supply of really great stories is so small, the demand by picture makers so great, that the successful author quickly finds a path beaten to his door by eager film story editors. Like the recipe for rabbit stew which began, "First, catch your rabbit," to be asked by a

studio to join its writing department, you must first prove that you can write.

The training needed for studio readers, architects, research workers, interior decorators, and others has been established in previous chapters. These subsidiary trades and professions will also have to offer, in the studios as now constituted, comparatively little opportunity because of the few positions open.

But in the enlarged cinema of the future, brightened by color, deepened by third dimension, physically extended by television, and immeasurably expanded by a new and great educational market, there will be opportunities far beyond those open today. In no other industry or art is the view of the future so bright and so alluring.

Let us turn back, for a moment, for one last moment, to the motion picture of the present. If this book has shown that the current cinema deserves more careful and thoughtful consideration than it has received, it will have accomplished its purpose.

Too few know of what they are talking when they classify a photoplay as good, bad, or indifferent. Too few have known enough about the background of a great picture to evaluate it correctly. Many can judge the literary quality of a story from which a photoplay has been made, but this is not an accurate yardstick, for the picture is dependent on many equations which are not present in either the novel or the stage play.

Our motion picture mosaic is now complete. We have watched each tile as it has been made. We know the loving care which representatives of 276 arts, pro-

fessions, and vocations have lavished upon their separate contributions. We have seen specially qualified artisans take these individual tiles and by a distinctive technique merge workmanship of many hands into a composite. This composite has been so deftly accomplished that the casual visitor to a photoplay theatre is not aware of separate tiles, but only the final whole.

Armed with your new knowledge, your future appreciation of a photoplay will no longer be either casual or incomplete. Fine photoplays will have a thousand new values for you.

A good picture will cease to be just "a good show." You will see beyond it to thousands of trained hands and into a myriad of clever minds.

"At long last" you will be able, truly and accurately, to judge the greatness of a great film; the mediocrity of a poor one. Photoplay "appreciation" by these criteria gives new power and scope to the imagination. It opens a great new pulse-stirring vista of a screen of the future whose achievements will dwarf any we have known to this day.

And with these words the destiny of the screen is left in your hands.

APPENDIX I

TYPES OF AMATEUR MOVIE CAMERAS

For the facts here given the author is indebted to Walter Evans, acknowledged expert in this field.

Two types of moving picture cameras and projectors are now being marketed by the leading manufacturers of amateur motion picture equipment. They are defined by the film width used, as 16 millimeter and 8 millimeter.

The 8 Millimeter for the Amateur

For the home movie enthusiast, whose efforts will be confined to taking scenes of his children, or family, vacation trips, and similar pictures, the 8 mm. would be the natural choice. The light weight of 8 mm. cameras (1½ lb. average) increases its attractiveness for hiking, fishing trips, and other trips. The economy of the 8 mm. camera itself is an important consideration. There is also the substantial saving of film cost, 8 mm. film costing approximately one third of the price of 16 mm. film. Logically more film would be used by an 8 mm. camera owner, unhampered by the greater cost of operating a 16 mm. camera. Hence, the dividends in pleasure derived from his hobby would be greater to the owner of the 8 mm. equipment, providing this type satisfies his requirements. The principal of the limitations of the 8 mm. should be mentioned also: i.e. the simplicity of design of the camera limits the effects obtained, and the maximum screen size limits the audience to whom it may be shown. Among the better known makes in the 8 mm. classification are the following:

Eastman Cine 8	Keystone
Bell & Howell Filmo 8	Paragon
Agfa-Ansco	Univex

Prices of good 8 mm. cameras vary from $25.00 to $100.00, according to lens equipment and workmanship. Projectors are slightly higher in cost, varying to the necessity for an electric motor drive, cooling system, and good optical units for the best screen image.

A. For simple 8 mm. cameras it is only necessary to:
   (a) Thread film (In some types this is very simplified.)
   (b) Set exposure on lens
   (c) Wind the spring
   (d) Press the button

B. For advanced 8 mm. cameras there are added features:
   (a) Variable speed
   (b) Variable focal length lenses
   (c) Cine effects

The 16 Millimeter for the Advanced Amateur

Many people in all parts of the world have developed a real talent for taking pictures and even rival the professional cameraman in his hobby. For the amateur who aspires to rival the theatre or screen with his film efforts, the 16 mm. size equipment is quite essential. Only with 16 mm. cameras can certain professional cinema tricks be accomplished.

While the simpler models of 16 mm. cameras may weigh only 3½ pounds, a camera capable of doing all the tricks desired for semiprofessional work might weigh as much as 15 pounds, thus limiting its portability.

With modern 16 mm. projectors, the limitation of audience size inherent in the use of 8 mm. projectors is adequately overcome with the 16 mm. Pictures are now satisfactorily projected on screens 14 x 18 feet wide to audiences of two and three thousand persons. Various focal length lenses permit latitude in screen size in relation to the distance to the projector.

Among the better known 16 mm. cameras and projectors are the following:

Eastman Cine	AGFA Ansco
Bell & Howell Filmo	Zeizz
Victor	Paillard Bolex
Pockette Simplex	

Prices of the simpler type of 16 mm. camera average around $50.00. When special lenses, tripod, exposure meters, and special effects are desired, it is easily possible to expend $500 on a really complete outfit.

The 16 mm. projectors are priced from about $75 to $400 for silent picture projection. Sound-on film 16 mm. talking picture projectors are about double the price of silent machines. Here, again, the interchangeable lenses and the screen used influence the ultimate cost to the amateur.

A. Simple 16 mm. cameras require:

(a) Magazine loading—no film threading
(b) Set lens exposure
(c) Wind the spring
(d) Press operating lever

B. Advanced 16 mm. cameras have added features which include:

(a) Variable speed
(b) Turret, variable lenses
(c) Critical focusing
(d) Reflex finder
(e) External long film magazines
(f) Electric motor drive
(g) Hand crank, double exposure or lap-dissolve device
(h) Single frame attachment for animations
(i) Masks, footage counters, and other special professional effects.

APPENDIX II

This book, in common with recent publications dealing with motion pictures, sets 276 as the number of arts, professions, and vocations required in making motion pictures within a large film studio. As a matter of fact, if we added isolated professions and vocations used perhaps once a year, the list would rise to four hundred or more. Examples of such professions or vocations more infrequently used are beekeepers, butterfly experts, tropical fish experts, men who can cook Hawaiian poi, men who can operate outrigger canoes, native style, pearl divers, and many more.

A list of 276 regularly used employees follows:

Accountant, cost
Accounting machine operator
Actors
Adding machine operator
Advertising, copy writer
layout man
Ager, clothes
settings
Alto, singer
Amplification board operator, sound recording
Architect
Arrangers, music
Artificial flower maker
Artist, mosaic
sketch or oils
Associate producers
Auditor
Auto mechanic, new cars
old cars
Aviator

Baker
Bandsaw operator, construction
Battery maker
repair man
Barber
Baritone
Bass violin player
Basso
Beaders, wardrobe department
Blacksmith
Boat builder
captain, sail
steam
engineer, Diesel
steam
Bookkeeper
Bricklayer
Bus boy, restaurant
Butcher
Buyer

Cabinet maker
Cameraman, assistant
color camera
head
operative
still

Canvas handler, grip department
sewer
Carpenter, finish
rough
shaper
Cashier
Caster, plaster department
Casting director
Cellists
Chauffeur
Charwomen
Chef
Chemist, cosmetic
film laboratory
Cleaners, dry
Clerk, billing
file
mail
rentals
shipping
stock
Comedy constructionist, (gag man)
Company manager
Composers, music
Concrete workers
Conduit worker, electrical
Construction, electrical
foremen
miniatures
Copyists, music
Copyright expert, music
stories
Cornetists
Cutters, tailor shop

Dance directors
Dancers, modern
tap
toe
Dentist
Designer, character costumes
decorations
floral arrangement
modern costumes
Developer
Dietitian
Director
Dishwasher
Doctor, medical
osteopathic
Draftsman, detailer
general
Dramatic coach
Drapery maker
Dyer

Editor, film
negative film
newspaper (publicity)
positive film
scenario
story
Electrician, home wiring
conduit construction
motor winder
set illumination
Embroiderers, wardrobe
Engineer, air conditioning
chemical
construction
efficiency
electrical
gas
gas engines
locomotive
marine engines
mechanical
pump
sanitation
sound recording
sound reproduction
steam engines
Engraver, metal
photo
Enlarger, photographic
Expert, continental (European)
customs and manners
military affairs

Expert, oriental customs and manners
table etiquette and order of precedence at official affairs
Exploitation expert

Farmer
Fashion writer (publicity)
Filtration expert, water
Firearms, repairman
Fireman
Fitters, wardrobe
Florist
Flutist
Furniture repair
Furrier

Gardener
Generator expert, electrical
Grip

Hairdresser
Harpist
Hoist and elevator man
Hospital orderly

Ignition expert, gas engine
Inspectors, film quality
recording
Installer, sound recording and reproducing
Interior decorator

Laboratory superintendent
Lace maker
Landscape architect
artist
gardener
Laundress
Lawyer
Leather worker
Librarian, film

Librarian, music
research
Linguist
Linotypist
Locksmith
Lumberyard foreman

Machinist, automotive
Machinist, precision
Magazine writer, publicity
Make-up man
Manicurist
Masseur
Milliner
Model maker, metal
wood
Molder, metal
plaster
Monitor (or mixer), sound department

Newspaper writer (publicity)
Night watchman
Nurse

Office boys
Optician
Orchestra leader

Painters, house
portrait
scenic, theatrical
sign
stencillers
Pantryman
Paperhangers
Papier maché workers
Pastry cook, commissary
Pedicurist
Pianist
Piano tuner
Pipe fitters
Plasterer, effect
house

Playwright
Plumbers
Policeman
Polisher, film laboratory
Porters
Portrait photographer
Potwashers, commissary
Powder man, explosives
pyrotechnics
Printer, film
publication
Projection machine operators
Property man
Publicity director
Purchasing agent

Reader
Re-recording expert
Research expert
Re-toucher, photographic
Rigger, marine

Sailmakers
Sailors
Salvage men
Scenario writer
School teacher
Sculptor, special face molding, make-up
Sculptors, statues
Seamstresses
Secretary
Set dresser
Sewing machine operators
Sharpshooter
Shoemaker
Silversmith
Singing instructor
Soda fountain operator
Sopranos
Splicer, film
Steelworker
Stenographer, English
German
Italian
Spanish
Sticker man, construction
Storekeeper
Street cleaner

Tailor
Talent scout
Taxidermist
Telegraph operator
Telephone lineman
operators
repairman
Teletype operator
Test Director
Timekeeper
Tinsmith
Toymaker
Tracer, art department
Tractor operator
Trainer, domestic animals
wild animals
Transportation expert
Typesetter
Typewriter repairman

Upholsterer

Violinist
Voice coach

Waitresses
Waxer, laboratory
Wigmaker
Woodcarver

GLOSSARY

AUTHOR'S NOTE: This glossary of terms includes not only standard expressions but succinct, semislang trade parlance which has given motion pictures a vital and distinct idiom of their own. Acknowledgment is made for definitions used or adapted, which originally appeared in the *Journal of the Society of Motion Picture Engineers*, Vol. 17, No. 5, November, 1931.

Ac'e-tate film: Film the base of which is composed principally of cellulose acetate.

Ac-tin'ic ray: A light ray of sufficient energy to make important chemical changes in substances or the skin of the body.

A ger: Film studio technician whose business it is to give new buildings, rooms, furniture, and costumes an artificial appearance of age.

Ake'ley: A type of camera for taking rapidly moving objects; for example, race scenes.

Angle shot: A motion picture scene which continues or duplicates the action from or of the preceding scene, but which is photographed from a different angle.

An' i mat' or: Pen and ink artist who makes successive drawings of the same characters for use in a film cartoon comedy. When the drawings are photographed, an illusion of action is given to the characters.

Answer print: The first release print made of a picture.

Ap-er'ture: The opening in the aperture plate of the camera, projector, sound recorder, or positive film printer at which each individual picture or the sound track is halted during exposure, printing, or projection.

Arranger: A musical technician who balances values between instruments and voices by writing for each a part in the musical score, which was originally composed by another.

Ash-can: A form of carbon arc light spotlight rarely used today.

Atmosphere: Term used in studios to denominate anything, animate or inanimate, that emphasizes the fact that the scene is laid in a particular time or place.

Atmosphere actors: Minor players who by their appearance give a specific human character or racial tinge to a crowd scene.

Baby spot: Smallest sized spotlight; used for concentrated light on a small surface, such as a backlight on a player's hair, or for calling attention to some object, animate or inanimate, which has played or is about to play, a specific part in the unfolding of the dramatic action.

Backlight: Light from the rear focused on the hair or body of a person to secure the effect of sharp relief. Perhaps the most common technique used in modern artistic photography.

Balloon tires: A make-up term for circles under the eyes.

Banner: Form of theatre advertising printed on a long strip of cloth, paper, or board; frequently hung across a street at right angles to a theatre.

Beards: Casting office collective term for all actors with natural beards.

Billing: Stage and screen term for placing and size of type used in words advertising players in a specific picture. "Star billing" for Joe Doakes would be, "Joe Doakes in *So and So*"; "featured billing" for Joe Doakes would be "Martin Zilch in *This and That* with Joe Doakes."

Bi-pack: A form of film, used in color photography, which has two color-sensitive emulsions, essentially in contacts.

Bit: Small part in either a stage play or photoplay, but one with speaking lines; next step from non-speaking "atmosphere" or "crowd" appearances.

Blimp: A light metal cover, usually of cast aluminum, which fastens tightly over a camera, keeping from the stage and the recording microphone the familiar "clicking" noise of the camera.

Bloop: Sound made when in the reproductive projector a beam of light passes through a sound track which has been badly spliced or patched. Also the synchronizing marks on sound track and motion picture film.

Blooping patch: A black section, approximately triangular in shape, introduced over a splice on a positive sound track to prevent the noise (bloop) which the splice would otherwise cause during the reproduction. The patch effects a gradual diminution of light transmitted through the sound track, followed by gradual restoration of the original value. The patch may be applied with black lacquer or may be a triangle of black paper or film cemented on the track.

Blow-up: Still photographic term for a very large print made from a small negative.

Blows: When an actor forgets his part, one says that he "blows his lines."

Blue glass: A round or square piece of specially made blue optical glass; used by head cinematographers to translate the natural colors of a setting into the black, white, and gray values of the non-colored motion picture.

Blurb: Slang for short newspaper item in praise of a theatrical attraction.

Bon-bon: A type of spotlight.

Boom: May be either a camera boom or a microphone boom. A camera boom is a device of light steel or duralumin. From a weighted base on wheels, it can extend approximately thirty feet forward or upward and swing in a circle, carrying the camera at its extreme end. Used for scenes emphasizing action and movement. A microphone boom consists of a standard supporting a light telescoping pole which can extend forward twelve feet or more, carrying at its end the operating stage microphone. It can be lowered or elevated or moved in an arc to follow an actor over a considerable area of the setting. With the exception of its extra gadgets, it looks exactly like an old-fashioned well sweep.

Broad: A floor stand lamp which has a rectangular light box on a thin steel standard; used for mass illumination of an interior set; also used for smaller exteriors.

Bull man: Circus term for elephant trainer; also used in motion pictures.

Bumps: Studio casting office term used in referring to actors or actresses who will permit themselves to be roughly handled (thrown downstairs, out of windows, etc.) for a melodramatic effect; e.g., "He will do bumps."

Bungalow: Same as *blimp.*

Business: A "piece of business" is any bit of characteristic action by an actor or actress in a scene of a stage play or a photoplay. Throwing a custard pie might be comedy "business." Tapping a desk with a pencil might be used by an actor to enhance his characterization of a nervous business man.

Camera: Container of metal, wood, fibreboard, bakelite, or other light-resistant substance with all light excluded except through a lens opened or closed by a shutter. This lens admits light to sensitized film or glass plate. A camera with an intermittent cam mechanism permitting sixteen single pictures to be taken consecutively each

second for silent pictures and twenty-four for talking pictures is a motion picture camera. A camera set for single pictures, each a separate unit, is a "still" camera. A type of very small hand camera with a very fast lens is called a "minnie" or candid camera.

"Camera": Traditional starting command of a director; used to start the photographing of every film scene.

Candids: Unposed photographs made in action by small cameras; widely used in publicizing motion picture personalities.

Cast: Characters in a stage or screen play.

Cat man: Circus term for trainer of lions; also used in studios when animal pictures are made.

Cells: Film cartoon-making term for the 20,000 individual pieces of celluloid upon which are drawn the progressive movements of the characters or objects in a motion picture cartoon.

Change over: In projection, the act of changing one projection machine to another, preferably without interrupting the continuity of projection.

Channel: See *recording channel.*

Chew scenery: An expression of stage origin meaning *overact*, as, "He chews scenery."

Cine-(sĭn'e): A prefix used in some words referring to the motion picture art, or motion picture apparatus; e.g. *cinematic, cinematographer.*

Cinema: Standard term for pictures which give the illusion of movement when projected at sixteen pictures per second through an accepted motion picture projector, for silent films and twenty-four to the second for talking pictures.

Cin'e-ma-tog'-ra-pher: A cameraman who supervises the photography of a motion picture.

Cin'e-pho'-to-mi-crog'ra-phy: Motion picture photography through a microscope.

Cliff hanger: Studio term for serial picture of the melodramatic type; arose out of fact that early serials featured players in thrilling action on high cliffs.

Climax: Peak dramatic moment of a stage or screen play.

Close-up: Any photograph, or any single frame in a motion picture, in which the major subject occupies a large portion of the total space. The close-up is one of the unique and valuable assets of motion picture technique.

Col-lo'di-on: Chemical used in make-up.

Comic: A player who gets laughs from an audience easily, either by some freak of appearance or vocal articulation, or by an instinct for the timing of movement. Also called a comedian.

Con-ti-nu'-i-ty: The written form of the photoplay. See *scenario.*

Copyist: Person trained in the technique of copying musical scores.

Crepe hair: False hair used in making wigs and mustaches.

Crowd people: An assistant director's term. See *atmosphere actors.*

"Cut": Traditional command by which a director announces the completion of any photographed scene.

Cut back: A scene in a motion picture which reverts to previous action.

Cut in: An incidental scene or subject, inserted in a motion picture, which breaks the continuity.

Cutter: The person who selects and arranges the photographed scenes of a motion picture. Also called *film editor.*

Cutting: The selection and arrangement in the proper sequence of the various scenes in a motion picture. Also called *film editing.*

Dailies: Studio term for scenes in a picture taken one day and processed and shown to the director or producer the next day. From these he makes his choice of the best "takes." Also called *rushes.*

Dark room: Darkened room in which unexposed motion picture or still photographic film is loaded and unloaded from containers.

Dead stage: Talking picture studio stage upon which no recording of sound is being done.

Depth of focus: That portion of subject between foreground and background which is considered sharp or in focus.

Deuce: A 2,000 watt spotlight.

Developer: A chemical solution used to bring out the latent image on the emulsion of photographic film.

Developing: Method of chemically treating exposed photographic film or plates, to convert the latent image into a visible image.

Diaphragm (*dī'a-fram*) (acoustical): The disk of a loudspeaker which is caused to vibrate by electrical impulses, thereby becoming a source of sound; also a disk in a microphone which is caused to vibrate by impinging sound waves.

Diaphragm (optical): A device, such as a perforated plate or iris, which limits either the aperture of a lens, the field covered by the lens, or both, depending on its location.

Director: Talking picture studio technician in charge of rehearsing players and directing photography of their dramatic or comic action. He is completely in charge of all production activities on a studio stage.

Dissolve: The gradual transformation of one photographed scene into another. In a *lap-dissolve*, the fade-in of one scene is superimposed upon the fade-out of the other. (See *fade-in*, *fade-out*.) This may be accomplished by double exposure or double printing.

Dolly: A type of movable camera platform.

Dope: Casting department term for any player of dissipated appearance.

Double exposure: The superimposing of one image upon another, upon the same piece of film.

Dow'a-ger: Casting department term for middle-aged actress of "society" type.

Down in the mud: An expression used to describe the voice of a player who speaks inaudibly. If the microphone cannot pick up the player's voice adequately, it is said, by the sound recording engineers, to be "down in the mud."

Dress men; dress women: Casting department term for minor part actors and actresses, of cultivated type, who are able to wear clothes well and appear to advantage in scenes depicting wealth or good breeding.

Dubbing: Re-recording a sound record by electrical means. The operation may involve transference from a film record to a wax record, wax to wax, film to film, or wax to film. Dubbing is used for editorial purposes, altering sound volume levels, and inserting incidental sounds, such as musical accompaniment, background noises, etc.

Dupe: A duplicate negative made by printing from a positive film, or by printing from a negative and reversing.

Ear: A rectangular, almost square, piece of board or black framed canvas which hangs on the knob of a light called a broad, or on the edge of the camera itself to keep illumination from a direct.focus on the camera lens.

E-mul'-sion: The light-sensitive chemical coating on film which, after exposure to light, makes chemical changes; these, after developing, fixing, and washing, produce the final photographic image.

Exchange: Distribution center to which release prints of new pictures are sent. These prints are in turn rented to theatres for varying periods of exhibition. Each distribution company has thirty or more exchanges placed at strategic geographic points in the United States and Canada. An exchange may handle the product of one studio or of several.

Exterior: A scene which appears to have been taken out of doors. Small exteriors, the immediate outside of houses, etc., are frequently photographed on a studio stage.

Fader: A projection device which varies the sound output in any room or place where pictures are projected, raising it or lowering it until the volume most acceptable to the auditors is reached.

Fade-in: A gradual appearance of a projected picture from total darkness to full screen brilliancy. This is another unique feature of motion picture technique.

Fade-out: The antonym of *fade-in.* A gradual disappearance of a projected screen image.

Fat part: A particularly fine, essential rôle.

Feature: A motion picture of five reels or more, designed to form the main attraction of a film exhibition program.

Feeder: In a comedy team of two, the player who says or "feeds" a line which, when replied to by the main comedian, brings a laugh from the audience.

Figbar: Insincere, fulsome praise. When a character in a story is overwhelmed with such praise, it is said that he is "given the figbar."

Fill-in light: Light arrangements by a cameraman which soften shadows and give modeling to settings and to faces.

Film: A flexible, transparent support on which a light-sensitive emulsion has been coated, or a processed strip of such material containing a series of developed photographic or dye images.

Filter: A glass or gelatin device placed before a camera lens to make certain photographic corrections. Filters are in various colors, red, yellow, green, blue, orange. To photograph a girl in a white dress against a horizon containing white clouds, a filter would be used in order to give the girl's clothes different values of white from the clouds, keeping her from merging photographically into the clouds.

Five: A spotlight using a 5,000 watt incandescent globe.

Fixing: The chemical process of making a developed image permanent by removing the undeveloped light-sensitive substances.

Flag: A board, painted black, or a frame of black canvas, fastened to an adjustable standard which can bend up, down, or to either side to shade the rays of a light source.

Flash: A short motion picture scene, usually occupying not more than three to five feet of film.

Flash back: A short cut back. (See *cut back.*)

Flat: A section of painted canvas, thin board, or the like, used in building either stage play or photoplay settings.

Flood light: A type of lighting, or a type of light, which produces a wide, general illumination over a fairly large area.

Flop: A picture which fails.

Flutter: Sound department term for distorted sound effect caused when the reproducing projector runs at uneven and improper speeds, which leads to rapid and varying changes of pitch.

Focus (*verb*): Act of adjusting position of a lens with relation to the surface on which the image is formed, in order to obtain the sharpest image of the subject.

Focus or *focal point* (*noun*): Point at which a lens produces the smallest image of an object-point at a given distance.

Follow shot: The shot made while the camera follows people or objects as they move; also called a *trucking shot* or a *dolly shot.*

Foyer: Vestibule of a theatre.

Frame (*noun*): A single picture on a motion picture film.

Frame (*verb*): To bring a frame of a motion picture film into register with the aperture of projection period during the stationary period of its halt behind the lens of the projector.

Frame-line noise: Noise caused by maladjustments of the optical system of a reproducer, caused by the interruptions by the frame lines to the light passing to the photoelectric cell; also called *motor boating*, for its sound is similar to that of a motor boat.

Free lance: Term for a screen player who is not under contract to any one studio, but who works successively for any company needing and contracting for his special services.

Gaffer: Studio parlance for the head electrician of a single producing unit. He works closely under the orders of the head cinematographer in lighting the setting.

Gag: Stage and studio term for any laugh-producing situation.

Gobo: Black canvas over a three by six foot frame which sits on the floor; another form of shade to keep strong direct light from the lens of the camera.

Grain: Visible separations on a developed piece of film. A chemical constituent of the developed emulsion of a film is sometimes seen when pictures are enlarged to too great a size from an improperly photographed or prepared negative.

Grande dame (gränd' dăm'): Casting department term for actress capable of playing imposing middle-aged or elderly women of the "society" type.

Grip: Well-trained handyman carpenter particularly adept in making all emergency changes of settings required during the production of a picture; valuable member of a producing unit.

Hag: General casting department term for any slatternly female type.

Ha-la'tion: Halo surrounding the image of a bright object in a photograph, when the object has reflected light into the lens. To prevent halation, putty or thin gauze is used to dim the reflecting surfaces. "Gobos," "ears," "flags," and other forms of shades are also used to keep strong light out of the camera lens.

Heavy: Stage and screen term for a villain.

Hit: Theatre term for a successful stage or screen play.

"Hit 'em": Head electrician's order meaning "Turn on the lights."

Hypo: Solution through which the film is run after the latent image on sensitized film has been brought out by the developing solution. The solution stops the action of the developer and by dissolving the undeveloped parts of the emulsion renders the film insensitive to light from this point. The term hypo comes from one of the solution's principal chemicals, sodium hyposulphite.

Inkies: Studio electrician's abbreviation for the incandescent and noiseless lights used to illuminate talking picture settings.

Interior: A scene which appears to be taken indoors. In the first days of films, before artificial light, all interiors were taken out of doors under straight or diffused sunlight. Occasionally today, and usually on location, interiors are taken out of doors.

Iris: An adjustable diaphragm of thin plates in front of a camera lens. Its action resembles that of the iris of the eye.

Iris in; iris out: Using an iris diaphragm on a camera to give the general effect of what a man sees when he slowly opens or closes his eyes.

Juicer: A professional illuminating electrician.

Junior: A medium-sized condenser spotlight of concentrated beam using a 1,000 or 2,000 watt incandescent lamp for key lighting; modeling of the face through lights and shadows. Smaller than a bon-bon.

Key light: Main light source for the faces of the characters, as distinguished from the general illumination of the setting.

Leader: A piece of blank film attached to the beginning of a reel of developed film for convenient threading or insertion into a projection machine.

Lens: (a) A piece of glass or other transparent material having two polished surfaces, both of which may be curved, or one may be curved and the other plane. (b) A combination of two or more single lenses designed to operate as a unit. In actual practice, many cameramen confine themselves to six lenses: a 24 mm. for very wide angle shots; a 35 mm. for long shots of a setting; a 1⅝ inch or 40 mm. for medium long shots; a two inch or 50 mm. for medium close-ups; a three inch or 75 mm. for close-ups; and a four inch or 100 mm. for extreme close-ups. For trick effects he may use occasionally a lens of very delicate wide angle focus, 18 mm. This produces intentional dis-

tortions. 28 mm. and 32 mm. are less used types of wide angle lenses. There are a number of "telephoto" lenses for long distance outdoor photography. These have exactly the quality of and look like an old-fashioned telescope. They range from 6¼ inches to 17 inches.

Lens hog: Term of derision for an actor or actress who tries to remain in the center of the camera's vision beyond the time properly required to photograph the action of his particular contribution to the scene.

Level: Sound term meaning volume of sound.

Lines: Stage and talking picture term for an actor's written part in a stage play or a photoplay.

Live stage: Stage on which sound is being recorded. At its door a red light burns intermittently and a loud buzzing sound is heard as a warning to stay out while the microphone is "alive."

Location: Studio term for any place outside studio gates where actual photographing of scenes in a photoplay takes place.

Magazines: Film containers of a camera.

Make-up: Chemicals of different formulas applied to face, hands, or body to improve their appearance photographically, or to give an artificial aspect of age, youth, disease, or deformity. All cosmetics are used as make-up, but not all make-up chemicals are used as cosmetics.

Matte: A mask constructed of sheet metal or other opaque material and having an opening of any desired shape. This is placed in front of the film in a motion picture mechanism for the purpose of blocking out definite portions of the picture. When you see a scene as through a keyhole, a keyhole matte is used, for one example.

Mi'cro-phone: An electro-acoustical instrument designed to convert acoustical (sound) waves into electrical waves. Converts noises or a voice into varying electrical waves.

Mixer: See *Monitor.*

Monitor: Sound recording engineer responsible for recording.

Mon-tage': A series of quick dissolves or "wipes" of various pertinent scenes that dramatize in a few seconds a number of different related episodes building toward a certain dramatic point.

Motion picture: The representation of an object or objects by the rapid presentation of a series of pictures showing the object at successive but definitely separate intervals.

Motion picture projector: A device for projecting motion pictures, preferably to a plain, white, blank surface.

Motor boating: See *frame-line noise.*

Movies: Slang diminutive for motion pictures.

Mug shot: Slang studio term for "close-up."

Negative: Processed photographic material, commonly film, in which the values of light and shade existing in the original object are reversed.

Nitrate film: Photographic film, the base of which is composed mainly of cellulose nitrate; the most common form of motion picture film.

One sheet: Basic unit of billboard advertising, whether it be for motion picture attractions, automobiles, or foodstuffs. See *poster* for combinations in which "one sheet" appears.

Operative camerman: Photographic technician who physically operates a motion picture camera on a set.

Optical disk: A disk of optical glass which, placed before the camera lens, diffuses the sharp outlines of an image.

Optical glass: Special form of fine glass, particularly suited for the making of eyeglass or camera lenses.

O.S.: Scenario abbreviation for "off stage"; usually refers to action out of sight of the cameras.

Pan (from *panorama*)*:* To move the camera on its own axis over a partial or complete arc, or upward or downward. The general effect of a "pan shot" is to simulate what a man sees when he moves his head. Extreme pan shots where the action moves forward, or upward, or sideways with great rapidity, are accomplished with a special form of camera called the "Akeley."

Pan'chro-mat'ic: Applied to film emulsions that are sensitive to the entire visible spectrum; i.e., which give to each color proportionate shading from white into black or black into white.

Pan shot: See *pan.*

Parallel: Folding or permanent platform of specific height on which camera or lights are placed during photography. Three and six feet are common sizes.

Pho'to-e-lec'tric cell: A form of electric mechanism which, sensitive to light, changes electric current values proportionately to the change of light; the device which makes it possible to change a photographed sound track back into sound again, just as it was originally recorded by a microphone.

Photoplay: A story told in the form of motion pictures.

Positive: Processed photographic material in which the values of light and shade are similar to the original object. The print exhibited by theatres on their screens is a positive print. The positive is printed from a negative which was originally exposed in a camera.

Positive stock: Light-sensitive film designed for use in making motion picture positive prints for public exhibition.

Poster: A printed or lithographed advertisement made up of combinations of a unit called the "one sheet." Posters are commonly found in one, three, six, eight, and twenty-four sheet sizes.

Powder man: Studio expert in the handling of explosives.

Pre-release: A picture exhibited in one or two cities as a test of public opinion before the official date of its simultaneous release to theatres in all parts of the country.

Preview: A showing of a photoplay in a public theatre in advance of its official national public "release." Previews give producers, directors, and players actual "audience reactions." Corrections of dramatic faults found at such previews are made by means of "retakes" (substitute scenes).

Printer: A machine for making from a camera exposed negative the positive prints for projection to the public in all theatres.

Property: Stage and motion picture term for any movable thing in a setting which is to be photographed, such as, furniture, pictures, pins, and needles.

Prop man: Technician in charge of properties.

Publicity: An organized plan to interest the public in a specific personality or production.

Raw stock: Studio term for undeveloped motion picture film.

Recording channel: A complete system of amplifying and control equipment, from the microphone to the film or disk used in making a sound record. In common studio practice, each company or unit making a picture is allotted a recording channel.

Reel: Flanged spool on which film is wound; also the quantity of film that can be wound on such a spool, usually about 1000 feet.

Release: A photoplay completed and ready for public presentation.

Release print: Positive print made for public exhibition. See *positive.*

Retake: The remaking of a scene not considered satisfactory after it is seen on the screen.

Reverse shot: The photograph of a scene from the opposite direction from which it was originally taken; e.g., if a camera has photographed a scene through a doorway, the reverse shot is made inside the room and toward the door.

Rifle: A type of lamp which has for its reflector a serried or corrugated surface which diffuses the reflected light.

Ro-tum'bu-la-tor: A camera platform which moves forward on wheels and whose base can itself move in a circle. On this base is a heavy round metal post to which the camera base is fastened. The camera base can be raised and lowered on this post. The rotumbulator gives a great deal of mobility to the camera.

Rough-cut: First assembly of the individual filmed scenes of a finished picture.

Running the lines: Rehearsing the dialogue.

Rushes: Same as *dailies.*

"Save 'em": Electrician's term for "Turn off the lights."

Scenario: The written form of the photoplay; a technical term for a story transformed into written form so subdivided as to be an accurate guide to directors and players in making succeeding scenes in a photoplay.

Screen: Surface on which a motion picture is projected.

Scrim: A form of shade placed in front of a light. It is similar in size to a "flag," but instead of being made of canvas or board it is centered with gauze through which the light passes and is diffused.

Script: Another studio term for *scenario.*

Senior: See *Junior.* Larger lamp of same type, using 5,000 watt globe.

Sequence: In a motion picture, a connected series of dramatic or comic events in one place or tied to one place by photographic effects. It carries a portion of the whole action to a logical conclusion and to a proper connection with the following sequence. It is comparable to an act in a play.

Setting: An interior or exterior built on a studio stage or outside a studio, which simulates real, historical, or fancied rooms or buildings.

Sharpness: Clearness or distinctness of a photographic image.

Shooting: Studio term for the act of photographing a scene in a photoplay or any bit of action before a camera.

Shot: Photograph of a scene or action.

Sides: An old stage term for the pages of an actor's part.

Silk: Studio electrician's term for a rectangular frame over which is stretched very light uncolored silk. This frame is placed in front of a broad to reduce the illumination. Silks may be also in round form and placed in front of spotlights.

Sixty: Huge spotlight used for flood illumination of large interiors or exteriors. Rises twenty-two feet on a telescoping platform. Lamp generates an estimated 3,000,000 candle power. Comparable to the enormous spotlights used by the army and navy. Also called a *sun arc.*

Slate: Board bearing name of picture, director, number of scene, number of "take." Serves as an identification of scene for the film editor. Held in front of the camera, it is photographed either at the finish or the start of a scene.

Slow motion: Effect of retarded action produced by photographing scenes at a rate of many more frames a second than the sixteen frames to a second which is standard speed for silent photography. Largely used in newsreels or

in short subjects endeavoring to explain various athletic techniques. When projected at sixteen frames to the second, a "slow motion" effect is attained.

Smash hit: Theatre term for a photoplay which is received with exceptional enthusiasm by the theatregoing public.

Sneak: Term given to the first preview of a picture, which occurs at a remote theatre where the reaction will be that of an average audience. The film is usually overlength, and the "sneak" preview indicates the points at which it may be cut or edited.

Soup: Slang for the film developing mixture.

Static: Lacking movement. A scene may be described as "static" if it fails to show dramatic vitality.

Stock company: Group of players under contract to a single motion picture studio, or "legitimate theatre."

Strike order: Order to remove a set from a stage after the work on it has been completed and okeyed by the associate producer.

Stunt man; *stunt woman:* Actor or actress able to do dangerous athletic, acrobatic, or technical feats to provide a "thrill" in a photoplay.

Stunts: Difficult or dangerous action in a photoplay.

Sun arc: See *sixty*.

"*Sync*": Studio diminutive of the word *synchronization*. When sound and picture are not running together (e.g., when a character's mouth apparently moves out of time with the words being spoken), the scene is said to be "out of sync."

Take: One photographic and sound recording of a talking picture scene.

Takem: Comedy term for a strong facial reaction; e.g., the expression on a comedian's face after a fall. Such a reaction, extremely exaggerated, would be called a "double takem."

Tarp: Diminutive form for huge black tarpaulins or black canvas used to keep out weather or light from an exterior setting.

Telescopic lens: Lens able to photograph a scene at a long distance and bring it into seemingly close range.

Tempo: The timing and mood of a photoplay.

Test: A photographic, sound, or full talking picture (photographic and sound) trial of a person, animal, setting, costume, or make-up; taken to determine suitability for a specific picture or to determine possibilities of a person as a new member of the acting profession.

Three sheet: See *poster.*

Throw the line away: Speaking a line without any particular emphasis. Lines are frequently thrown away in order to give greater force to their later repetition.

Treatment: A story written scene by scene as the action would appear in a final picture but without numbered divisions or special technical or dramatic instructions. The dialogue is only suggested. The intent is merely to promise a skeleton's framework sufficient to permit the correction of basic story errors before the story is transferred into the final polished scenario form. It is the intermediate point between a published or original story or stage play and the scenario.

Tri-pack: A form of film, used in color photography, which has three color-sensitive emulsions, one on top of the other.

Trucking shot: Same as *dolly shot.*

Tubby: Sound recording term used to describe inaccurately recorded low tones, which give the effect of a man talking with his head in a tub. It is usually a result of the low frequencies being exaggerated.

Turkey: Slang for a bad picture.

Twenty-four sheet: See *poster.*

Types: Players whose faces or figures set them into distinctive, easily recognized classifications; e.g., fat men, dowagers, juveniles, hags.

Underscoring: Method of placing music under dialogue in a sound picture.

Up to speed: Stage sound engineer's signal that the motors of the camera and of the sound recording machines are moving in exact synchronization.

Wardrobe: Term of stage and screen. It may be the assembly in some central place of costumes or modern clothes for the use of professional actors, or it may be the total of the costumes required by one actor or actress for the performance of his professional duties.

"Wind her up": Studio slang for "Start the cameras."

Wipe: Transition of one scene into another by literally wiping the first off the screen and revealing the new scene behind it. Frequently used in montage work.

Work print: Assembly of talking picture scenes used by producers, directors, and film editors during the editing, re-editing, and preview tests of a photoplay. From the work print, as finally accepted, a matched negative is assembled from which the final theatre release prints are made.

Wow wows: Slow changes in sound pitch caused by a slow variation of the speed of the film through the sound reproductive device of the projection machine.

Wrap it up: Last order on a set; means "finished for the day."

Zizzy: Sound recording term used when sibilants have too much prominence.

Zoom shot: Shot made as the camera quickly moves up to an object.

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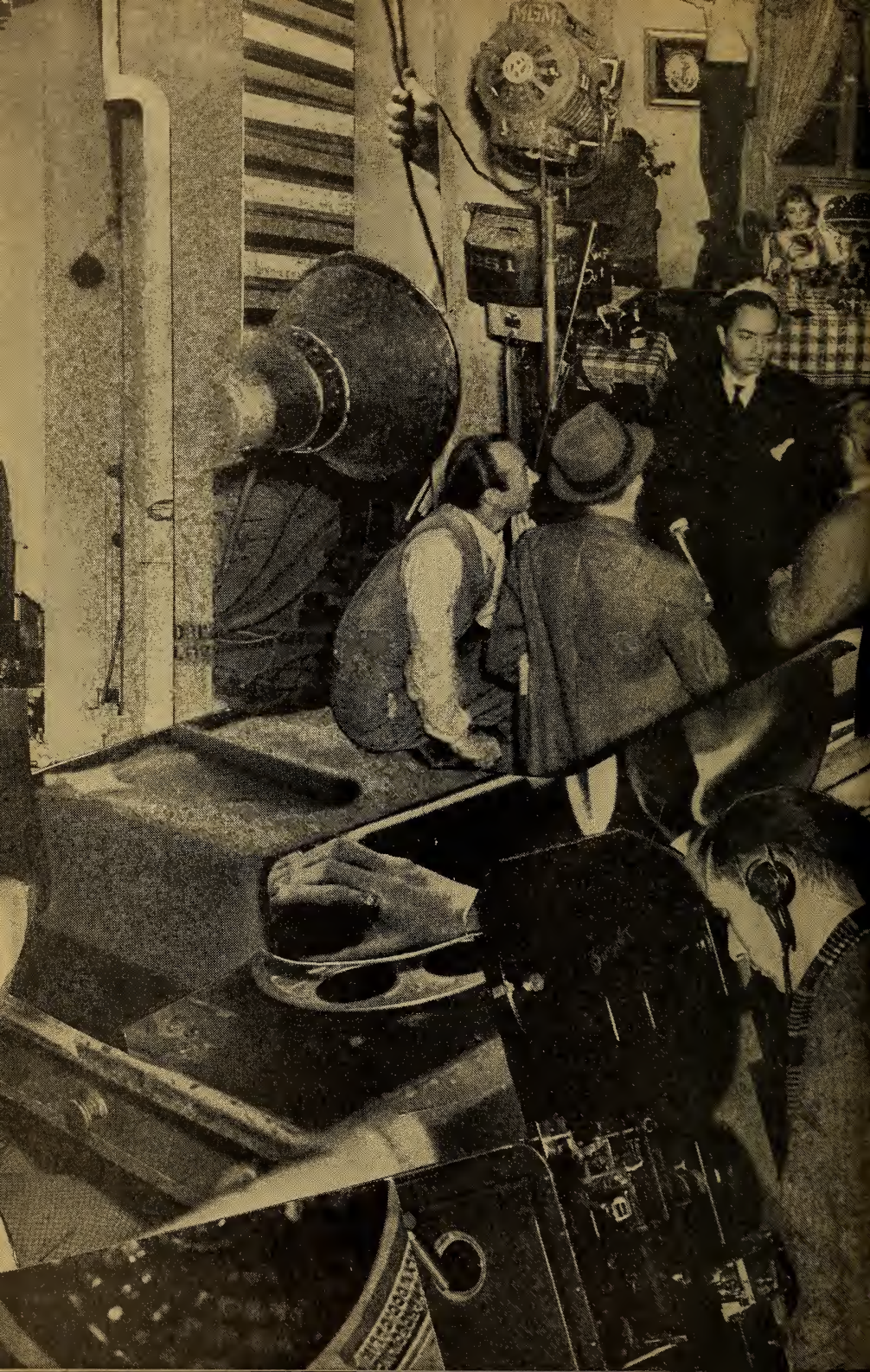
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